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SOME OF THE THINGS THAT ORTHOPEDIC SURGERY HAS DONE FOR THE WAR

AND THAT THE WAR HAS DONE FOR ORTHOPEDIC SURGERY *

EMIL S. GEIST, M.D.

Assistant Professor of Orthopedic Surgery, University of Minnesota Medical School

MINNEAPOLIS

Today few of us would agree with Hippocrates, who said that "war is the only proper school for the surgeon." Nevertheless, wars, as a rule, have furthered the progress of the healing art. All branches of medical science have been benefited. The original work of Larrey during the Napoleonic wars was great. He was the first to amputate successfully at the hip. He established first aid and was the first to use ambulances. Esmarch described, during the Franco-Prussian War, the subject of wound excision, practically the débridement of today. The Boer War showed us the benefits of mass antityphoid inoculation; while the advances made in the prevention and care of yellow fever by Reed, Carroll and Gorgas are the result of the Spanish-American War.

It is premature for any one to predict what changes in medicine due to the recent great war will in the future be recognized as progress. Nevertheless, we can say with little fear of contradiction (*a*) that the Carrel-Dakin principle of wound sterilization has come to stay, and (*b*) that orthopedic surgery, as a specialty, has fully justified its *raison d'être* and is here to stay.

Orthopedic surgery has scored a great victory. This section is not only joining in the world-wide paean of jubilation over the definite and final success of Democracy over Autocracy, of Right over Might, but also it is justly celebrating the triumphs of orthopedic principles and practice over the deformity and crippledom which threatened to blast the lives of our fellow citizens.

That this is so is due to the small but stalwart band of allied orthopedic surgeons who existed in 1914 and who were under the spiritual leadership of that Foch of orthopedic surgery, Sir Robert Jones, of England; we Americans were ably led by our own beloved Brackett of Boston.

Difficulties had to be encountered: difficulties not only due to the paucity in number of this body and its ignorance of military ways and means, but also due to a general lack of appreciation of the importance of principles long known to orthopedic surgeons. One cannot be an orthopedic surgeon without being able to think "orthopedically." The expression "orthopedic thinking" is no misnomer. Thus, it came that, at the outset, there were too few who had been trained to treat and prevent potential deformities; there were too many who treated the injury well, but who had not been trained to think of future function.

The difficulties were unavoidable, and in the vast number of cases due to honest misunderstanding. They had all been overcome on the historic 11th of November—on which date American orthopedic surgery, like the American army, was just "getting its gait."

When orthopedic surgery doffs her military garb and contemplates her features in the mirror of events, she will find that changes have occurred. She is now grown up; her field of endeavor is enlarged. In the decade preceding the great war, she had already reached advanced, awkward adolescence; and even then, she ministered increasingly to the adult cripple and his problems. From now on, she will find herself facing the cripple problem in its entirety and she will have to join with municipality, state and Union in order to solve it properly. Leadership lies before her in the care not only of the child cripple, but also of the industrial cripple; not only of the actual cripple, but also of the potential cripple.

In 1914, the orthopedic surgeons of England were noted more for quality than quantity, and it was necessary for us to send over a large group of Americans for purposes of temporary relief. This and other factors due to the war have brought about a unique, cordial relationship which promises to be of mutual advantage in the future.

A flood of orthopedic literature in the form of textbooks, monographs and articles has appeared. Some of it will have only historical value, whereas the experiences recorded in a considerable part of it will always remain as living guidance for peace time work. The task still remains for some one to separate the kernel from the chaff.

Standardization was attempted and achieved in many orthopedic fields. In this country, the standardization of splints is perhaps the most noteworthy example, while in England operative methods and postoperative care were perhaps most successfully standardized.

Many new types of splint and many new methods of cure have been found efficient. Most of them are the products of the fight against that *bête noire*, infection. Fortunately, we have less occasion to meet this enemy in civilian life, and fortunately the terms débridement,

* Chairman's address, read before the Section on Orthopedic Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

primary suture, secondary suture, guillotine, will occupy a minor, though necessary, place in our applicable stock of expressions.

If the war had lasted longer, we might have had solved and standardized for us the vexatious foot problem. The very multiplicity of solutions for this problem argues here, as elsewhere in medicine, that the real answer has not yet been found. It would appear that the anterior heel described a long time ago by Ansel G. Cook has found all but universal favor in certain disorders, and its originator ought to get the credit for it.

Fractures were to a great extent put under the care of the orthopedic surgeon in American overseas hospitals. For this reason, there existed a remarkably small percentage of preventable deformity in the cases which reached this side of the Atlantic. There is no doubt that in future civilian practice, the orthopedic surgeon will be called on to treat in a greater degree than ever the fractured bone.

The psychology of the wounded soldier still under military control is different from that of the ordinary civilian patient, and perhaps also varies from that of the injured industrial employee. If so, the experiment of the curative workshop as applied to civilians will be followed with interest. If a success here, it will certainly put the Zander room on the scrap heap.

It would appear that electricity, in the form of the Bristow coil, is again seeking admittance to the ranks of our armamentarium. If we readmit electricity, let us make sure that it plays no pernicious pranks such as it did before we discarded it, as we thought at the time, forever.

A number of schools in military orthopedic surgery, more or less efficient, ground out, in the course of a few months, a considerable quantity of young "war" orthopedic surgeons. Many of these were stationed in positions in which clinical advantages were great. Of these confrères, many will, no doubt, wish to remain in the orthopedic field. To these, I would say, "Welcome." But I would add to this welcome, a little whispered advice. This advice would be: "You have seen much of war orthopedic surgery; it is doubtful if you have seen it all; but even if you had, you would not by virtue of that fact be fitted for civilian orthopedic surgery. It is quite different. Go to Boston! Go to New York! There is no better place for you in this wide world. And stay there long; long enough to master what you will see and hear and think about while there."

It was almost providential, as a result of peace time efforts, that we were well prepared to take charge of two important types of cases. I refer to the bone graft and the tendon operation. The principles of the former were well understood and were applied whenever needed. In numberless cases of peripheral nerve injury have tendon transplantation and tendon fixation operations yielded definite, well anticipated results. It may be safely said that for every case demonstrably improved by operations on nerve tissue, there have been ten bettered by some form of tendon operation. At this point, we must not forget to mention the knowledge which we were able to apply in paralytic cases in the prevention of deformity and the prevention of muscle stretching, which knowledge was gained from the study of the thousands of cases of infantile paralysis in the decade preceding the war. Little did any of us think that these afflicted children were helping to solve the paralysis problem of their big brothers.

While many changes have taken place and many new devices and methods have been originated by the war, nevertheless, the orthopedic surgery of the war was founded on the true and trusted principles discovered and laid down during peace time by thinking orthopedic surgeons in their laboratories and their clinics.

And now, one by one, we again turn to these havens of peaceful endeavor, leaving behind us the confusion, glamour, trappings and horror of war.

Nearly to a man did we orthopedic surgeons join in this war. We are glad we were in it; glad that we carried on. We are also glad to leave it. We feel that we have given much; but we have also learned much.

CONSERVATION OF VISION, AND BETTER OPHTHALMIC PRACTICE*

CASSIUS D. WESCOTT, M.D.
CHICAGO

[The chairman, after discussing various measures relating to the Section on Ophthalmology, proceeded:]

Much has been done by our special committee, and by individual members of the section, to spread the gospel of conservation of vision; but we must do more. The problem of the protection of the baby's eyes is fairly well in hand, though much remains to be done in some states. But the experience of the selective draft has called attention to defective vision in young adults, which was to say the least surprising. My own experience on an advisory board impressed me with the enormous number of cases of rejection for myopia, uncorrected, or very imperfectly, corrected. In talking with the men about their eyes, I found that the neglect was due to their own ignorance and that of their parents, or to the fact that they had been imposed on by opticians who had sold them glasses without advising them to seek medical advice. In the present state of our knowledge, it should be unlawful for any one not a trained ophthalmologist to undertake the correction of myopia in a child or a young adult. I doubt very much if any legislation which we might initiate would reach the optician or the optometrist, but I wish they might at least be apprised of the harm they are doing by depriving people of proper care.

In my talks with prescribing opticians, I have held that they should never prescribe lenses which did not give the patient normal vision with each eye, and that they should not attempt to fit children. But the observance of these rules would not enable them to avoid sinning, for as we all know, there are many cases of incipient cataract, glaucoma and other serious conditions in which normal vision is possible, to say nothing of myopia and myopic astigmatism. Obviously the remedy is to educate the people.

The question is how best to do it, and what can we, as an association, do that we are not already doing? I think we should provide for more pamphlets and more public lectures, and do more as individuals and keep everlastingly at it. At the risk of seeming egotistic, I am going to tell you what I have tried to do

* Chairman's address, read before the Section on Ophthalmology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

myself. I practiced general medicine for ten years, and have never been able to get away from the human side, even in a practice limited to ophthalmology. The correction of an error of refraction involves a consideration of the patient's general health as revealed by the anamnesis, or suggested by the external examination and the use of the ophthalmoscope. I find myself discussing with younger patients the choice of an occupation with reference to the condition of the eyes, and the general health; with older people the importance of regular and frequent general examinations in order to keep well, and retain full efficiency. I advise all patients to have the eyes looked over once a year at least, and a complete examination, with the use of a mydriatic, every two years, or oftener, as indicated. In answering the questions of intelligent patients and informing the ignorant, I have found the pamphlets of our conservation series a great help and hand them out daily in my office. I have taken particular pains to supply the teachers and mothers of families with these admirable helps. I find that some of the pamphlets have passed through many hands, and I am frequently asked for more. I have given a number of public lectures, and in my talks to nurses and medical students for over twenty-five years have tried to make a missionary of conservation of each one of my hearers. I have grown more or less hopeless in regard to the matter of annual school examinations by the teachers, introduced and so strongly advocated and made so simple by Dr. Allport. It has never been done effectively in Chicago, and I often see children who have been in our public schools for years without a visual examination until increasing myopia made a front seat a necessity. The visual examinations which are made now are made by school nurses and school physicians only on complaint of the teacher. When all our politicians have completely lined their pockets with gold, we hope to have several things done which are now neglected.

The American Board for Ophthalmic Examinations was organized because of the obvious need of some systematized and standardized training for those who are to practice ophthalmology. You are all familiar with the good work it has done and is doing. As individuals we should encourage as many as possible to take the examinations of this board. The qualified should be recognized and honored by the certificate of the board: those who are unfit should be made aware of their shortcomings, and encouraged to qualify themselves by further study and training. In this connection I would like to quote from a paper by Dr. Edward Jackson:[1]

> An organization like this could arrange to give, just before its annual meeting, a week of intensive training on the microscopic diagnosis of intra-ocular tumors, under three or four of its members who have given special attention to ocular pathology. Or, to make the best use of the time with the least strain of any one set of powers, this might be combined with a similar course on experimental optics, or the minute anatomy of the eye with reference to operations on the anterior segment, or the location of foreign bodies. Such courses should be put on a basis of fees that would compensate the instructors, and provide the necessary material or equipment. Similar courses could be arranged by local ophthalmologic societies for the benefit of their own members, and to suit their convenience.
>
> Finally, it would help to remove the greatest defects in training for ophthalmic practice, it would emphasize the importance of fundamental training, if the American Board of Ophthalmic Examinations would divide its examinations into two parts. It could give to students who have been out of the medical school one year or more an examination on ocular anatomy, the physiology of vision, geometric, experimental and physiologic optics, and ocular pathology. Two or more years later it could give the examination in ophthalmoscopy and other branches of clinical diagnosis, clinical examination of patients, therapeutics and operative technic. Something of this kind is needed to prevent the essential preliminary work from being neglected, and to prevent such neglect from impairing the value of all training in the so-called practical branches.

1. Jackson, Edward: Defects in Education for Ophthalmic Practice, Tr. Am. Acad. Ophth. & Otolaryng., 1917, p. 144.

These are admirable suggestions, and I wish they might be seriously considered by the section. We should certainly do all we can individually and collectively to discourage and discountenance short cuts to ophthalmic practice. I am often asked to teach men refraction or recommend schools where it can be learned in a few weeks. I invariably tell these men that it cannot be done and beg them to devote at least a year to preparation, explaining that the ability to do a good refraction is only one of the obligations assumed by the physician who would essay it. Some of my most grateful patients are among those who have learned during an examination for glasses that they were not so well as they thought they were, and that the ophthalmoscope is a great aid in general diagnosis.

I think we should also do something toward the standardization of undergraduate ophthalmic teaching. Iritis is still being treated with boric acid and argyrol; acute glaucoma with atropin, and sufferers from chronic glaucoma are being told that they must wait until they are quite blind before the cataract can be removed. The more I know about ophthalmology the more interesting the eye becomes in relation to general diagnosis, and the more convinced am I that physicians generally are not taking advantage of their opportunities. I am also sure that it is not their fault—entirely. They haven't been taught. Several men who served on local boards in and near Chicago during the draft were not able to follow the simple directions given them for taking the vision. But the need has been so well and so recently brought out by Dr. Woods, Dr. Jackson and General Munson and by the Council of British Ophthalmologists that I am sure I need say no more. I feel quite confident that the Council on Medical Education will be glad to consider suggestions from this section on undergraduate medical teaching in ophthalmology, and I hope I may be asked to appoint a special committee to study and report on this subject.

I think it would also be well for us to consider and give our endorsement to a compensation table. The present methods of estimating compensation for ocular injury are very unsatisfactory and incomplete, and to some seem unnecessarily complicated. I would be glad to appoint a committee to study this question with a view to preparing something which may be presented as authoritative to the legislative bodies and compensation boards.

In conclusion, I cannot resist the temptation to express what I know you all feel, our very great pride in the work of members of this section in the service of our country. We are glad to see many of them back from service, and with us today, and thank heaven that they could go.

22 East Washington Street.

AN EXPERIMENTAL STUDY OF THE EFFECTS OF DUODENECTOMY

A PRELIMINARY REPORT *

F. C. MANN, M.D.
AND
K. KAWAMURA, M.D.
ROCHESTER, MINN.

The scope of this investigation of the effect of duodenectomy in dogs is twofold: (1) to determine whether the duodenum is absolutely necessary to life, and (2) to determine its rôle in the functioning of the gastro-intestinal canal.

From a practical surgical standpoint, duodenectomy is probably of very little consequence, although several partial resections have been performed satisfactorily. From the physiologic point of view, however, the operation is significant. The duodenum occupies a very important anatomic and physiologic position just distal to the stomach, and is seemingly intimately associated with the physiology of that organ, with special reference to its mechanism for emptying. The liver and pancreas discharge their secretions into the duodenum, which bears some relation to the manner in which these organs functionate. In addition to this, the duodenum itself elaborates a secretion and contains glands (Brunners) which are found only in this part of the body. It is thus possible that the duodenum is of importance in the general physiology of the organism and plays a necessary part in the function of the gastro-intestinal tract and in digestion. It seems logical, therefore, to believe that the removal of the duodenum will produce noticeable effects, and that the compensation of the body to its removal will make possible an evaluation of its real importance.

PREVIOUS EXPERIMENTATION

The first experiments recorded in the literature of the removal of the duodenum were made for the primary purpose of attempting to determine the relative part the duodenum and pancreas play in the production of experimental diabetes, and not for the purpose of determining the function of the duodenum. The results of the experiments of this group of early investigators, Pflüger,[1] Ehrmann,[2] Lauwens,[3] Minkowski,[4] Cimoroni,[5] Tiberti,[6] Rosenberg[7] and Bickel[8] may be grouped under definite headings. All the experiments were performed on dogs, with the exception of Pflüger's; some of his were done on frogs. The method of removing the duodenum varied. In no instance was a complete, normal reconstruction made. The continuity of the gastro-intestinal tract was maintained either by a gastro-enterostomy (Lauwens, Minkowski, Cimoroni, Tiberti, Rosenberg, Bickel) or by an end-to-end anastomosis of the jejunum to the pyloric end of the stomach (Ehrmann, Tiberti). The bile and pancreatic secretions were taken care of by:

1. Ligation and complete occlusion of both ducts (Ehrmann).
2. Cholecystenterostomy and ligation of the pancreatic ducts (Minkowski, Tiberti, Rosenberg).
3. Biliary fistula and ligation of the pancreatic ducts (Cimoroni, Tiberti).
4. Biliary and pancreatic fistulas (Lauwens, Bickel).
5. Transplantation of both ducts into the stomach (Ehrmann, Lauwens).

The results of these investigations were not very satisfactory. In most instances the animal died shortly after the operation; in only a few instances did it recover from the immediate effects of the operation. Two of the animals lived two weeks (Lauwens), one three weeks (Rosenberg), two four weeks (Minkowski), and one four and one-half weeks (Bickel). The final results of some of these experiments are incomplete.

Gaultier[9] studied the effect of injury to the duodenal mucosa in animals, and Zak[10] reported observations on the effect of caustics on the duodenum in man.

Matthews[11] studied the effect of various types of experimental operations on the duodenum. The duodenum was not actually removed in his experiments. Stassoff,[12] in a research on the effect of the removal of various portions of the gastro-intestinal tract, also removed the duodenum. None of his animals in which the duodenum was completely removed survived. He was able to keep one animal alive in which the portion of the duodenum distal to the entrance of the bile duct was resected.

Since the early investigators of duodenectomy were mainly interested in the relation of the duodenum to pancreatic diabetes, their data on the function of the duodenum and the effect of its removal are not complete. Most of the animals died shortly after operation, and in instances in which the animal survived the method was subjected to the criticism that not all the duodenal mucosa was removed.

It should be noted that experiments dealing with the short circuiting of any particular portion of the gastro-intestinal tract do not parallel those in which the same portion has been surgically removed. For that reason the experiments of Matthews should be classed with those on intestinal obstruction and not of duodenectomy.

Since our investigation was started, three articles on the subject have been published. L. R. and C. A. Dragstedt, McClintock and Chase[13] studied the effect of duodenectomy in two series of dogs. In the first

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* From the Division of Experimental Surgery and Pathology, Mayo Clinic.

* Read before the Section on Pathology and Physiology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Pflüger, E.: Untersuchungen über den Pankreasdiabetes, Arch. f. d. ges. Physiol. **118:** 267-320, 1907; Durch neue Experimente gestützte Bemerkungen zu den jüngsten Arbeiten über den Duodenaldiabetes des Hundes, Arch. f. d. ges. Physiol. **123:** 323-328, 1908; Ueber die durch Resection des Duodenums bedingten Glykosurien, Arch. f. d. ges. Physiol. **124:** 1-28, 1908.

2. Ehrmann, R.: Ueber den Einfluss der Ausschaltung des Zwölffingerdarms auf die Zuckerausscheidung und über seine Beziehung zum experimentellen Pankreasdiabetes, Arch. f. d. ges. Physiol. **119:** 295-296, 1907.

3. Lauwens, R.: Exstirpation des Duodenums betreffender Brief an den Herausgeber, Arch. f. d. ges. Physiol. **120:** 623-625, 1907.

4. Minkowski, O.: Die Totalexstirpation des Duodenums, Arch. f. exper. Path. u. Pharmakol. **68:** 271-288, 1908; Deutsch. med. Wchnschr. **34:** 45, 1908.

5. Cimoroni, A.: Sugli effetti della resezione totale del duodeno, Sperimentale **62:** 523-534, 1908.

6. Tiberti, N.: Interno alla estirpazione totale del duodeno, Sperimentale **62:** 479-495, 1908.

7. Rosenberg, S.: Zur Frage des Duodenaldiabetes, Arch. f. d. ges. Physiol. **121:** 358-362, 1908.

8. Bickel, A.: Beobachtungen an Hunden mit exstirpiertem Duodenum, Berl. klin. Wchnschr. **46:** 1201-1202 (June 28) 1909.

9. Gaultier, R., quoted by Pflüger (Footnote 1).

10. Zak, E.: Glykosurie bei Verätzungen des Duodenums, Wien. klin. Wchnschr. **21:** 82-83 (Jan. 16) 1908.

11. Matthews, S. A.: One of the Functions of the Duodenum, J. A. M. A. **55:** 293-295 (July 23) 1910.

12. Stassoff, B.: Experimentelle Untersuchungen über die kompensatorischen Vorgänge bei Darmresektionen, Beitr. z. klin. Chir. **89:** 527-589 (Feb.) 1914.

13. Dragstedt, L. R.; Dragstedt, C. A.; McClintock, J. T., and Chase, C. S.: Extirpation of the Duodenum, Am. J. Physiol. **46:** 584-590 (Aug.) 1918.

series a two stage operation was performed, and in the second series a one stage operation. In the first series one animal lived twelve days, and in the second, one animal lived three months. None of the duodenectomized animals, however, appeared to keep in good condition.

Grey[14] removed the duodenum in three stages, leaving an interval of several weeks between each stage. One of his dogs survived all three operations (complete removal of the duodenum), and remained in perfect health for eight and one-half months.

Moorhead and Landes[15] also used a three stage operation for the removal of the duodenum. They were able to remove the entire duodenum and to demonstrate that dogs are able to live in perfect health after such a procedure.

Dragstedt and his collaborators clearly showed that a dog can survive duodenectomy, but their work is open to the same objections as that of many of the earlier workers, namely: The duodenectomy was complicated by a loss of pancreatic, and, in some instances, of biliary function. As they suggest, this probably was the cause of the failure of their animals to maintain health. The results of Grey, one of whose animals lived the longest after duodenectomy, and of Moorhead and Landes, prove that duodenectomy is compatible with life and perfect health in the dog for relatively short periods.

TECHNIC

In the first experiments we attempted a two stage operation for the removal of the duodenum. However, as it was our intention to make extensive studies of the gastro-intestinal tract and the various organs after duodenectomy, it was soon seen that by the time the second stage of the operation was performed the many adhesions would greatly complicate our studies. We attempted to devise a one stage operation by combining the two stage operation in one. We had a few successes by this method. One animal survived forty-one days, but in this case the pancreatic ducts were ligated.

On account of these unfavorable results a new method was developed, and two points were accomplished: (1) The duodenectomy could be performed quickly, and (2) all the other involved organs, such as the bile duct, both pancreatic ducts, the pancreas and the alimentary tract, were restored to correspond as nearly as possible to the normal state. Briefly described, the operation consists of four steps:

1. The dissection of the duodenojejunal fold, the mesoduodenum and the lesser omentum; and the ligation of the blood vessels supplying the upper jejunum and duodenum.
2. The separation of the pancreas from the duodenum and the isolation of the major pancreatic duct and the common bile duct, together with the minor pancreatic duct.
3. The removal of the entire duodenum, with a portion of the proximal jejunum and the distal pyloric portion of the stomach.
4. The implantation of the bile duct and the minor and major pancreatic ducts into the jejunum.

The technic described was developed on the dog, and, with slight modifications, it was found to be adaptable to several other species. The operation could usually be performed on the dog within from one and one-quarter to one and one-half hours, never longer than two hours. Several of the animals died as a result of the operative procedures before we had developed our technic. Others died from the results of intercurrent disease. After our technic was fully developed, however, practically all the animals lived.

RESULTS

Our results on dogs fully corroborate those of the more recent investigators. The animals quickly recovered from the operation and, with a few exceptions, have remained in excellent health. Their general condition has been good; their weight usually has increased or remained stationary. A few of the animals steadily lost weight and strength after the operation. At necropsy, or at exploratory operation on these animals, a dilated common bile duct and marked infection of the entire biliary tract were usually found. Evidently the transplantation of the ducts did not restore a condition sufficiently normal to prevent infection.

Examination of the blood to determine the cell count, hemoglobin, carbon dioxid combining power and hydrogen ion concentration did not reveal anything abnormal.

Examination of the gastro-intestinal tract by the roentgen ray, employing a standard barium meal, showed only slight deviation from the normal. In some instances, the barium left the stomach sooner than in the normal dog, probably because of the loss of the pyloric sphincter. At other times, it seemed that the emptying of the stomach was slightly delayed and that the course of the meal was a little slower, but in each instance this delay was not any greater than in some of the normal animals. In general, however, no difference was noted in the passage of the barium meal in the duodenectomized and in the normal dogs. Roentgenograms of the gastro-intestinal tract appeared normal. Future studies may show some effect of duodenectomy on the mechanics of digestion, but at present none have been noted.

REMOVAL IN OTHER ANIMALS

Up to this time all experimental duodenectomies, with the exception of a few on the frog, had been done on the dog. At the suggestion of C. H. Mayo, we attempted to determine the effect of the operation on other species, particularly on the herbivorous and omnivorous animals.

The duodenum was removed from the cat. The operation is easily performed on this species. It is necessary to transplant only one pancreatic duct, that which enters in conjunction with the common bile duct, as the other duct is quite small.

The goat was selected as a suitable type of herbivorous animal. The operation is difficult in this species. The duodenum is long; the length of intestine removed measured about 90 cm. As the pancreatic duct empties directly into the common bile duct, it is necessary to transplant only the latter. The thin walls of the jejunum make the anastomosis quite difficult.

The hog was selected as an omnivorous type of animal. The removal of the duodenum is very difficult in this species. As the bile and pancreatic ducts empty separately, two transplantations must be made. For expediency and in order to remove all the duodenum, as in operating on the dog, it was found best to section at the duodenojejunal juncture, invert the end of the

14. Grey, E. G.: Demonstration of a Duodenectomized Dog, Bull. Johns Hopkins Hosp. **29**: 152 (June) 1918; Duodenectomy: Its Effect On the Life of an Animal; Transplantation of the Pancreatic Duct, Surg., Gynec. and Obst. **28**: 36-42 (Jan.) 1919.
15. Moorhead, J. J., and Landes, H. E.: Duodenectomy, J. A. M. A. **72**: 1127-1129 (April 19) 1919.

jejunum, and unite the jejunum slightly more distally to the end of the stomach.

The duodenum was also removed from the monkey (*Rhesus*), its anatomy being similar to that of man. It is necessary to transplant only one duct in this species, since the minor pancreatic duct can be ignored.

We now have ten dogs, one goat and one hog from which the duodenum has been removed. One of the ten dogs was operated on six months ago. All the animals, with the exception of one dog, are in good condition.

SUMMARY

The investigation was undertaken for the purpose of determining the effects of the removal of the duodenum. A one stage operation for the removal of the duodenum was developed. The duodenum was removed from the dog, cat, hog, goat and monkey. Careful studies on the dog did not reveal any noticeable changes following the duodenectomy. The animals remained in good condition. Examination of the blood showed it to be normal with regard to cell counts, hemoglobin, carbon dioxid combining power and hydrogen ion concentration. The roentgen ray showed the course of a standard barium meal to be practically the same as in a normal dog. Experiments on the other species have been too recent to allow conclusions to be drawn, but it would seem that the removal of the duodenum in the hog is as innocuous as its removal in the dog. No data have been secured to show that the duodenum is of great importance in any of the species used. Future studies with particular reference to gastric secretion, etc., may give more positive results.

ABSTRACT OF DISCUSSION

Dr. W. M. L. Coplin, Philadelphia: Has the sugar metabolism been affected?

Dr. Francis Carter Wood, New York: What was the time required for such an operation?

Dr. Frank C. Mann, Rochester, Minn.: I have studied the evidence with regard to glycosuria in a very elementary way. In the animals I examined the sugar matabolism seemed to be normal. We made no tests, but the increase in weight and the good general condition seemed to indicate that there was no change. The operation is easily performed on the cat; it can be done in an hour, but cats have not nine lives from a surgical standpoint. They are the very poorest animals on which to do experiments. The operation can be done in one hour and a half on the dog. It takes longer when done on the goat and hog.

Cost of Blindness $31,000,000 Yearly.—It is estimated that the total annual expense of the blind to the country approximates $31,000,000. There are 70,000 blind persons in the United States. Of this number 41,000 are absolutely dependent on others for support. Apart from the economic loss caused by the removal of productive workers from the wage-earning class, there is added a financial burden in direct interest of the blind. A large item is the maintenance of special schools for blind children. It takes far more to educate the blind than the normal child. Including the expense of institutions, library facilities, home teaching, the amount soon approaches millions. Considering every phase of the question of costs, it is estimated that the total annual expense of the blind to the country approximates $31,000,000. Fifteen million dollars can be saved annually by the united efforts of education to avoid the many accidental cases of blindness in the industries by the prevention of lost vision caused by babies' sore eyes, measles, ulcers of the eyes, scarlet fever, trachoma, occupational diseases, wood alcohol poisoning, excessive use of alcohol and tobacco and uncorrected visual defects.

CLINICAL TYPES OF OCCUPATIONAL DISEASES

STUDY OF METHODS FOR THEIR PREVENTION *

LOUIS I. HARRIS, Dr.P.H., M.D.
Director, Bureau of Preventable Diseases, Department of Health
NEW YORK

More and more, physicians are beginning to appreciate a marked change in the spirit of the times. It has long been recognized that this is an era of great industrial development, but up to the present time only a relatively small number of physicians have discerned the far-reaching influence which industrial development is beginning to exercise on general medicine, surgery and preventive medicine. It requires no special gift of prophecy to foretell the time in the near future when many physicians, who, during the last few years, were wont to look on industrial hygiene and the study of occupational diseases with good-natured indulgence, or with more than a little of a certain air of condescension, will very seriously have to consider the readjustment of their practice to fit in with the needs of industrial medicine. Whether as a result of health insurance, or through a desire on the part of employers to comply with the insistent demand of the working people for effective protection of their health, it may be stated with assurance that industrial hygiene, industrial surgery and industrial medicine are bound to emerge clearly into view as most important special branches of modern medicine.

In its efforts to prevent occupational disease, the Division of Industrial Hygiene of the New York City department of health, as organized up to Jan. 1, 1919, received complaints from individuals and from labor organizations, and requests for advice and counsel from employers. These complaints and the requests for assistance time and again led to many investigations which brought us face to face with conditions of great interest, and showed that there exist in factories thousands of cases of illness which are either ignored or unsuspected. The sources of danger to the lives and health of workers from various chemical poisons and dusts, and from exposure to other hazards, can only briefly be illustrated here by the citation of several interesting experiences.

CARBON MONOXID POISONING

It came as a great surprise to those of us who are interested in this work to find nearly every winter, when windows and doors were closed — these being practically the only means of ventilation in many establishments—that a relatively large number of employees would simultaneously become ill from time to time, presenting a clinical condition which became fairly familiar with repetition. A typical instance was one relating to a factory situated on the three topmost floors of a twelve story factory building, given over to the manufacture of men's clothing. Of 125 employees, seventy-three became suddenly ill at about 2 o'clock one afternoon, and were seized with nausea and vomiting. Practically all of them complained of headache, dizziness and general weakness, which was particularly marked in the legs. A number were overcome, and

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several ambulances were called from nearby hospitals. Three employees were removed to hospitals, and a number of others were sent home under escort. Practically all recovered within a few hours, but in two cases symptoms of marked general weakness persisted for several days.

At this time, stories were current about the work of spies in impregnating the cloth used for manufacturing soldiers' uniforms with various poisonous substances. As the result, however, of several similar experiences in previous winter seasons, we felt reasonably certain that the condition was due to the improper removal of various gases of combustion, particularly carbon monoxid, and to their escape into the workroom. On investigation, in this particular instance, we found that our theory was apparently correct, but that the gas entered the working establishment from an unusual source. The rear doors of the three upper floors which communicated with a hallway that led to the roof had been left open by an employee, and a shift in the direction of the wind caused the chimney gases to be driven in considerable concentration down through a stairwell into the corridors, and then into the workrooms. When later we analyzed the facts in the case, we found that the employees who were affected were those who were at work near the rear of the shops where the doors were open.

What is more important from the standpoint of industrial medicine is this: We have found on a number of occasions during the past winter seasons that in connection with gas flames used for pressing-irons, or where furnaces were in operation, or, in fact, wherever incomplete combustion of gas or coke occurred, a clinical condition of a similar character frequently developed among large groups of employees. Altogether, about 220 cases of acute carbon monoxid poisoning, similar to the seventy-three cases referred to above, which were traced to the incomplete combustion of a variety of gases or fuel substances containing carbonaceous material, and in which acute symptoms followed exposure to these gases, came to our notice. Although, in several instances, careful examinations of the blood were made, we were not able to demonstrate the presence of carbon monoxid, but in the light of Prof. Yandell Henderson's investigations, showing that carbon monoxid in combination with the hemoglobin is readily given up in the presence of pure air, this can be readily understood.

Our examination of a number of men who were exposed to furnace gases and, particularly, a number of investigations which were conducted with reference to complaints made by persons employed in garages, have led us to believe that in industrial communities there are many persons who are affected with headache, marked anemia, general weakness and gastric symptoms whose condition is due in large measure to continued exposure to small amounts of carbon monoxid gas resulting from incomplete combustion. Numerous cases were called to our attention in which the private physician, having failed to ascertain the nature of the industrial environment in which a patient was employed, was apparently very much at sea to explain the cause of these symptoms.

The therapeutic agent of greatest value in the elimination of this source of complaint, which, we have reason to feel, affects many thousand persons in an industrial community like New York, is the application of simple sanitary engineering principles. It is necessary to remove noxious gases by the installation of exhaust or suction fans and by devices which can be made an integral part of furnaces, of gas irons or of engines which generate fumes.

The rapidly increasing use of electricity as a source of heat in connection with furnaces and various mechanical processes will also, in large measure, reduce the danger of poisoning from this source. In passing, it should be stated that the industrial physician must work in close association with the sanitary engineer, and particularly with those who have made a specialty of installing systems of artificial ventilation.

APPARENT CARBON DIOXID POISONING

Three cases of poisoning of an unusual character came to our notice through the office of the coroner about a year ago. A freighter, which had carried a cargo of molasses, was moored in an inlet in New York, and had unloaded its cargo. The men used the inlet water to flush out the hold of the vessel to remove the molasses that had adhered to the walls and the bottom. This inlet water was very heavily polluted, and after the flushing had been carried on for a considerable period of time, one of the crew began to descend into the hold, but was overcome while still on the ladder, and fell to the bottom. A companion immediately attempted to go to his assistance. He too was instantly overcome and likewise fell. A third man, who made a similar attempt, was also affected and fell violently to the bottom, sustaining injuries to the skull which confused the subsequent clinical condition. Several men, who were lowered with ropes, brought the three who had fallen out of the hold. Two recovered promptly, but the third man, who had sustained a severe injury to the skull, rapidly became comatose and died in a short time. At necropsy, a depressed skull fracture was found; it was questionable to what degree the fracture was the factor operative in bringing about the fatal termination. The blood was found to be of an extremely dark color, fluid, and had a very distinct sweetish odor. The lungs were engorged. While it was difficult to say in this case that the man had died of carbon dioxid poisoning, it appeared from the nature of the cargo, and from the manner in which the gases that were generated in the hold following the flushing with inlet water had acted on the three men, that we were dealing in this instance with carbon dioxid gas which had been generated as a product of fermentation, and which had caused an acute intoxication that was responsible for the fall of the deceased. These three instances are of special interest merely because they are examples of the variety of forms of poisoning which may be encountered in industry, and which rarely come to the notice of public health authorities except in the event of a fatal termination. This is due to the fact that there is unfortunately not sufficient team-play between the clinicians in private or hospital practice and the public health officers interested in industrial hygiene.

ANTHRAX

We have had an average of eleven cases of anthrax reported in New York City since 1915. While the source of infection in a small number of cases cannot be explained, the majority of them occurred in persons employed in the handling of hides, and more particularly among brush makers. From investigations which we have conducted in 102 brush making establishments, we found that because of practical difficulties alleged

to exist, the sterilization of imported bristles, particularly those intended for use in making shaving brushes, was and is virtually, entirely neglected. The wonder is that we have not had more cases of anthrax.

One gains the impression from the study of conditions in Wilmington, Del., where an enormous quantity of hides is handled, and from other places where anthrax is likely to occur, that many employees have infections of varying degrees of severity which are diagnosed as erysipelas or ordinary infections, and which are principally characterized by extensive cellulitis. So many of these cases are found among workers in the brush-making industry and among those employed in the handling of hides, and occasionally among longshoremen, that one cannot but come to suspect that a relatively mild anthrax infection may be of far more frequent occurrence than we have hitherto believed, and that although we have regarded this as a disease which is almost invariably fatal, there may be mild as well as severe anthrax infections which are not properly identified and which are the result of industrial exposure. At all events, this is a subject the study of which would be extremely profitable. Practically all of the patients with anthrax seen in the city of New York during the last four years, in which the progress of the clinical condition was not rapidly fatal, have been treated by excision of the malignant pustule, and in a number of instances the Eichhorn serum has been administered, apparently with good results. Of the forty-four cases reported in the last four years in the city of New York, twenty-five terminated fatally.

CHEMICAL POISONING

Even to one who has an intimate knowledge of the industrial life of a community, it is a frequent if not constant source of surprise to learn of the multitude of unusual trades and industries which are conducted in many small establishments scattered through a big city. One little suspects that a number of chemical poisons which seem to interest only remotely the student of industrial medicine may be a potent agent for harm in a given community. A chemical agent which may seem to affect only two or three persons working in a small establishment must never be judged unimportant until one considers the total number of such establishments which may be handling the same chemical substances in various parts of the country.

For example, our experience and that of others have indicated that arsenical poisoning from the manufacture, trade use, or handling of various arsenic salts must be more frequent in New York City than many would suspect. The possibilities for poisoning from the fumes of arseniuretted hydrogen exist in steel and iron mills, as well as in a number of other industries in New York City, as elsewhere.

Hydrofluoric acid is a source of danger among those who are engaged in etching designs on glassware; it produces varying degrees of irritation and ulceration of the mucous membranes and of the skin. It, too, may be frequently encountered in a large industrial community.

With the great impetus which the war has given to the manufacture of dyestuffs in this country, anilin poisoning and other related forms of chemical poisoning are to be looked for as a frequent cause of disease.

The use of mercury in the manufacture of thermometers and other scientific instruments, and in the manufacture of felt hats, is a far more frequent cause of mercurial "shakes" or tremors, cutaneous and mucous membrane ulcers, gastro-intestinal and nervous system disturbances, and early degeneration of the arteriorenal system than has been suspected.

The pathologic effects of lead in a multitude of trades have been harped on so often and so much as to have lost interest for the general practitioner; yet everywhere, in industrial centers, it continues to exist as a serious menace to the health of many. Judging from the number of reports of chemical poisoning in industry which private physicians and hospitals submit to health authorities and to medical journals as well, one would derive the impression that the types of industrial disease here briefly referred to, as well as many others which the limit of time does not permit one to enumerate, are almost nonexistent.

I may only mention, in passing, the patients suffering from poisoning resulting from trinitrotoluene and other explosives, among a number who returned disabled to New York during the war period, to indicate further the great range and variety of occupational diseases that one may encounter in a large city.

OTHER FORMS OF INDUSTRIAL DISEASE

Caisson disease occurs in scores if not hundreds of cases each year, in connection with the construction of tunnels and the excavation and construction of foundations for so-called skyscrapers in New York as elsewhere.

A fertile field for study of the peculiar and almost specific effects of stone dust was suggested by the reports made by the New York branch of the Granite Cutters International Association of America, showing that in one year, of 210 deaths occurring among members of this local branch, 50 per cent. were due to tuberculosis. How many other men, who died of pneumonia, were made particularly susceptible to the disease by the inhalation of sharp mineral dust could not be determined.

LEAD POISONING AMONG PRINTERS

One hundred and twenty-five printers were studied with a partciular view to discovering the presence of symptoms indicating lead poisoning. An interesting feature of this investigation was the fact that by special arrangement with the president of a local printers' union, the examinations were conducted at union headquarters. Because our clinical data are not complete in all cases, only 109 cases have been included in this preliminary report. A few of the more striking facts elicited in the course of this examination will be presented. A more extended account, comparing the frequency of lead poisoning as found in 402 painters, with its frequency in these 109 printers, will be presented in the future. Twenty-six of the 109 compositors gave a history of cough of long duration; nine gave a history of recent bloody expectoration; thirteen were suffering from night sweats; nineteen had lost a considerable amount of weight or strength, and also had pains in the chest of varying degrees of severity; twelve gave a history of pneumonia; fifteen, a history of pleurisy; eight were subject to attacks of bronchial asthma, and twelve had chronic bronchitis. A family history of tuberculosis was obtained in nineteen cases in which the diagnosis of tuberculosis was made. Seventeen per cent. of these printers gave signs of arrested

or active pulmonary tuberculosis. Further study is needed in order to arrive at a final conclusion with reference to the total incidence of pulmonary tuberculosis in this group. Respiratory diseases were common among these men; the total number of such diseases being thirty-nine, or 35 per cent.

Muscular pains, which are characteristic in those who are exposed to lead, were fairly conspicuous. Thirty of those examined had a decided backache. Considering that these men were all compositors employed at linotype machines and seated in a constrained position during the work, this apparently selective action on the muscles of the back is readily comprehensible.

Forty-two gave a history of obstinate constipation; twenty-two had very marked abdominal pains at irregular intervals; in fifteen of these twenty-two cases, the pains were described as being fairly frequent and severe; in five others the abdominal colic was so severe and so frequent as to cause marked suffering; seven suffered from frequently recurring attacks of diarrhea; nineteen gave a history of a distinct metallic taste in the mouth; twenty gave a history of marked pains and weakness in the arms; forty-two complained of marked pains or weakness in the legs; in eighteen, both the arms and the legs were affected in this way. It is remarkable that in not a single instance was a lead line observed among these printers; only one had a marked deposit of tartar near the margin of the gums. Forty-one of the 109 examined were compelled to wear glasses for ocular defects; in all, eighty-one were found to have defective vision. This marked prevalence of visual defects is quite in accord with the experience of those who have studied the ocular condition of printers. It is quite evident that special study and provisions with respect to lighting is essential in this industry.

In the examination of thousands of working people it has been our experience that the teeth, in a majority, were in a very defective condition. Among these printers, however, it was extremely interesting to note that only seventeen had very defective teeth, indicating, apparently, a degree of attention to the care of the teeth which is quite unusual among those employed in industry, by and large, and seemingly accounting, in large measure, for the absence of the lead line.

Twenty-six of these compositors had defective hearing. This relatively large percentage of cases of defective hearing is worthy of further study with respect to its possible relation to excessive noise from printing presses, etc. Ten had evidence of chronic endocarditis. In addition, there were six cases which showed myocardial affections. In eighteen there was distinct evidence of arteriosclerosis.

No cases of paralysis were found, but, as already indicated, a number of the printers showed very definite weakness in the arms and legs. Thirty-eight had marked tremors. The association of a positive Wassermann test with lead poisoning, which has been suggested by several observers, we were not able to verify in a study of over 400 painters, which I have reported elsewhere; nor could it be corroborated in the study under discussion. Only four of these printers had a positive Wassermann test. In thirty cases we found a marked degree of anemia. Out of a total of ninety-five cases in which the blood was examined, stippling was found in but a single instance. Four persons showed a fairly marked trace of albumin in the urine; one had casts. So much for an enumeration of miscellaneous findings.

Incidence of Lead Poisoning.—Very strong traces of lead were found in the urine in twenty-two cases; in nineteen cases a moderate trace was found, and in nine a very faint trace; in seventeen a suspicious reaction for lead was obtained, and twenty-two were negative. Altogether, eighty-nine of the printers were tested; the remainder of those examined failed to bring specimens of urine. This test, in accordaance with our previous experience, seems to be a very reliable one. In association with the other clinical symptoms, it has been extremely helpful in our determination as to whether an individual was suffering from active lead poisoning, or, whether plumbism was latent, the lead apparently being held in precipitation in the tissues and capable of being dissolved and absorbed as a result of metabolic disturbances, thus causing active manifestations of lead poisoning. In classifying the cases of lead poisoning among printers, we found that twenty-six of them had a number of clinical symptoms characteristic of lead poisoning, together with heavy traces of lead in the urine. Twenty-three others had one or more of the characteristic symptoms of lead poisoning, though not as marked as in the preceding cases, and this group too had evidence of lead in the urine. Two were cases which presented doubtful symptoms. In other words, forty-nine out of 109 compositors, or, roughly, 45 per cent., were suffering from lead poisoning. While in times past there has seemed to be a tendency to focus attention almost exclusively on lead poisoning in the discussion of occupational diseases, it still remains a fact, considering the great variety of industries in which lead is employed, that lead poisoning is a serious problem, as previously stated.

To our great amazement, we found among the union men whom we examined in the course of this study, and who are a well paid and unusually intelligent group, that very few of those who presented serious defects were aware of the existence of these defects. Practically all of them had been examined by physicians at different times for the treatment of various ailments, but the physician's view had been invariably limited to the consideration of the particular complaint which brought the patient to seek his care.

This experience, like so many others of a similar character, confirms one in the belief that there are very many thousands of persons in the city of New York, and in other industrial communities, who are suffering from physical defects or diseases of a more or less serious character, who have no intimation of the state of their health, and who, when they consult their physicians, are studied from a most narrow point of view. This would seem to indicate that we should make a strenuous effort to educate people at large to submit at frequent and regular intervals to thorough medical examination, so that abnormal physical conditions may be discovered in their incipiency in order that timely efforts may be made to correct such abnormalities.

INDUSTRIAL DISEASE AND HYGIENE IN THE MEDICAL CURRICULUM

Practically all the medical schools have thus far failed to include in their curriculum the study of industrial hygiene and of occupational diseases. In future years, these institutions will richly merit the reproaches

of their graduates because of their blindness in failing to recognize the signs of the times, and the needs of the nearly 40,000,000 persons who are employed in industry in this country. The medical schools of Harvard and the University of Pennsylvania are conspicuous among the very few institutions which devote some measure of attention to the study.

Early this year I was privileged to give what was probably the first formal lecture on industrial hygiene and occupational diseases, to the graduating class of College of Physicians and Surgeons, Columbia University, being required, however, to condense a review of the subject into a one hour lecture. During the past three years, New York University and Bellevue Medical College has given a relatively liberal course on industrial hygiene under the writer's auspices, to its students. Aside from the instances cited, and with possibly one or two other exceptions, so far as I know, all of the prominent medical colleges seem to be oblivious to the existence of industrial hygiene and industrial medicine. The medical clinics which are connected with universities for teaching purposes should utilize to better advantage than they now do, the wealth of clinical material which is available for the study of occupational diseases. Unfortunately, they have thus far virtually neglected this field. The hospitals in this country, with one or two notable exceptions, have likewise neglected the opportunity to study occupational diseases. Is it any wonder then, in view of the fact that the chief institutions of medical learning have failed to appreciate the significance of the occupational factors which influence the development of many diseases, that the private physician's work should reflect this general state of indifference or ignorance?

INSUFFICIENT INFORMATION OF PRIVATE PRACTITIONERS

In connection with the work of the New York Department of Health in the field of industrial hygiene during the period of four years, from the time I organized the work until I was required to relinquish it, a most active campaign had been conducted through various agencies to stimulate, persuade and, if need be, to compel hospitals, dispensaries and private physicians to report cases of occupational diseases which came to their notice. Notwithstanding all these efforts, the total number of cases reported by all the physicians, and by all the hospitals and dispensaries in the city of New York during that time, was virtually negligible. This deficiency was traceable in large part to the lack of proper medical education, and also to the lack of enthusiastic, intelligent and capable medical leadership in this field in New York City. A great opportunity for the study of occupational diseases presents itself to physicians who are employed by various industrial corporations and in connection with whose work a variety of health hazards exist. Already, a number of medical men have won distinction and enriched the literature of industrial hygiene and occupational disease study by their sincere and intelligent efforts in this new field of medicine. On the other hand, the great majority who accept employment as factory physicians are content to conduct what are essentially merely dispensaries for the purpose of rendering emergency service in cases of accidents; too often this work is done exclusively for the purpose of protecting the interests of their employers so far as claims for compensation may be concerned. They fail to see that they have an opportunity to be of most valuable service not only to their employers, but to the employees as well, and to play the part of pathfinders in this new field of medicine. Unfortunately, they view their "jobs" too often as pot-boilers, and are rarely alive to the rich opportunities which their relation to the factory and its workers affords them. The accompanying table shows the number of cases of occupational diseases reported in New York City, by hospitals and dispensaries, by private physicians and by the Public Service Commission, respectively.

FOUR YEARS' RECORD OF OCCUPATIONAL DISEASES

	Reported by Hospitals, Etc. Cases	By Physicians Cases	Public Service Commission Cases
1915	5	6	0
1916	53	13	0
1917	42	49	39*
1918	32	12	107*
Total	132	80	146

* Caisson disease.

The table shows that in spite of four years of intensive effort to bring home to physicians and institutions which care for the sick in New York City an appreciation of the importance of reporting all cases of occupational disease, we obtained a total number of 212 reports during the four years, from both sources. In connection with the excavation and construction of tunnels for the extension of the city's subway system, the physicians employed by the Public Service Commission reported, during 1917 and 1918, 146 moderately severe cases of caisson disease. Mild cases of caisson disease occurred which escaped detection or which were not reported. Excluding the cases reported by the Public Service Commission, it must be obvious that only an absurdly small fraction of the grave occupational diseases occurring among the several hundred thousand workers in our city are correctly diagnosed and recorded through the formal reports of institutions and private physicians.

OPPORTUNITIES OF HEALTH OFFICERS

The various federal, state and municipal health bureaus have opportunities for helpful research and educational activities in the development of proper supervision of the health of factory workers for the purpose of detecting and preventing diseases which are directly or indirectly due to industry. The officers of the U. S. Public Health Service and of the Department of Labor have made substantial and valuable contributions to industrial hygienic studies and to the study of occupational diseases. Schereschewsky, Alice Hamilton and others have done conspicuous service in this field.

The cooperation of the various agencies which are interested in industrial hygiene, with manufacturers' associations and with labor unions, needs greatly to be developed. Hospital and dispensary staffs and private physicians need to be brought to a keener appreciation of the great service which they can perform to society, as well as to medical science, by training and equipping themselves to recognize those diseases which are the direct and specific sequelae of occupation, and also the great number of diseases in which occupational factors play a more or less significant part. Not only will they thus add to the store of medical knowledge, improve

the efficiency of industry and preserve the health of working people, but they will also serve to reduce the enormous casualties from preventable diseases suffered annually by workers in industry, and lay the foundation for constructive, sane and helpful legislation. In only a few instances have state or municipal health officers included the subject of industrial hygiene and the prevention of occupational diseases in their health programs. They have failed up to the present to perceive how closely related industrial hygienic work is to the prevention of tuberculosis, pneumonia and the degenerative diseases.

Here and there, with very few exceptions, the state labor departments have given nominal and usually inadequate attention to industrial hygiene and the prevention of occupational diseases. All too frequently, when labor and health departments in any given community divide responsibility for this work, the effectiveness of their efforts has been marred by petty jealousies and conflicts as to authority. The state and local health officers are offered great opportunities in this new field of preventive medicine, not only because they enjoy the right of access to factories, but also because, in addition to conducting research as to influences affecting the health of workers, they have the power to enact and enforce laws to create proper sanitary conditions in the industrial environment, and to prevent diseases directly or indirectly due to occupation.

The labor unions, one would judge, would be keenly alert to the value of conserving the most precious asset of working people, namely, health. The earning capacity and the general welfare of the worker and of his family are so largely dependent on the maintenance of good health that one would quite logically expect intelligent labor groups to be the most ardent supporters of public officials who are charged with the responsibility of conserving the health of workers. Unfortunately, labor representatives in this country, generally speaking, have not manifested an understanding of the vital significance of health conservation to the welfare of the worker.

During a period of four years recently ended, I was fortunate in obtaining the support of a number of intelligent labor leaders in the city of New York, in furthering a program for effective work in the field of industrial hygiene. Through the cooperation of certain progressive labor leaders, the four central or chief labor organizations of the city, together with more than 100 subordinate labor unions, were organized by me to constitute the Labor Sanitation Conference, serving as a vigilance committee. It was through the efforts of this labor sanitation conference that the $20,000 originally allowed for industrial hygiene work, in 1915, was increased by an additional appropriation of $63,000 per annum.

Taking the country by and large, there is little evidence that labor organizations have even begun to appreciate that the campaign for the protection of the health of those in industry is quite as vital to their interests as better wages and shorter hours, to the procurement of which they have thus far limited practically all their efforts.

FUTURE DEVELOPMENT OF EFFORTS

In the hasty sketch which has been offered, I consciously and deliberately have attempted to picture the subject of industrial hygiene and occupational diseases as a practically undeveloped field of preventive medicine, still in a crude and formative state. The allusions to the shortcomings of medical colleges, of hospitals and dispensaries, of industrial and general practitioners and of health officers and others, so far as concerns their lack of sympathy and support of an aggressive campaign to develop industrial hygiene and the prevention of vocational diseases, was also deliberate. The health, vitality and well-being of millions of workers, as also the stability and welfare of their families, and of the nation as a whole, depend on the recognition by the medical profession of the significance of industrial hygiene as a part of preventive medicine. The emphasis which I desire to place on the inadequacy and faults of the present system of medical education, and of the methods for safeguarding the health of working people, is not intended as ungenerous criticism of the agencies already existing, which are concerned in the formulation and execution of a well developed program looking to this end. These criticisms are offered in the hope that in a measure they will help to hasten the day when state and city officials who are jointly responsible for the protection of the health of workers will lay aside their petty personal differences and jealousies to devote themselves exclusively to the solemn and serious duty of guarding the public health.

Expert, socially minded, conscientious and efficient health officials are urgently needed for the proper development of this type of work. They must come to feel secure in their tenure of office, as a result of the support of a public educated to appreciate the overwhelming importance of the conservation of human life. There must be team work among the state, municipal and federal officers. Nor should political considerations be permitted to dwarf the size of appropriations for work necessary to prevent the occurrence of occupational as well as of other preventable diseases. A nation that is rich enough in times of peace to expend enormous sums for improvements of rivers, harbors and postoffices, which have little justification except as sops to local pride and local interest, and, further, a nation which gives millions annually for the conservation of cattle and hogs, and which is ready, if need be, to expend millions daily for the purposes of war, should be brought as soon as possible to appreciate the transcendent importance of expenditures to conserve human life and human happiness, which are so dependent on health.

Although there have been recent signs that those interested in the development of industrial hygiene are coming into more intimate relations with each other, as testified to by the interlocking and improvement of the work done in this field by the U. S. Public Health Service and the U. S. Department of Labor, there exists still a most urgent need of a partnership of the latter two departments with the respective state and city officials responsible for the supervision of conditions in industry. At present there is too often overlapping, duplication, and even conflict between various agencies who subdivide part of this work among themselves. There is also a lack of authoritative leadership. At times one agency repeats the work already completed by some one else, without knowing that it is subjecting employers and employees to needless trouble and interruption from work. A clearing house

for official workers in industrial hygiene is most urgently needed. The U. S. Public Health Service would seem to be the logical leader to serve as clearing house, guide, and bureau of information, in the absence of a national department of health. It must be manifest, from what has already been said, that the future development of industrial hygiene and medicine hinges also on a reform of the curriculum of the respective medical schools, on the sympathy and willingness of private physicians and hospitals to aid in protecting the public welfare by equipping themselves for the recognition of occupational diseases, and by bringing to light cases coming to their attention, in order to show their relative frequency and importance as a cause of morbidity and mortality.

Employers must be instructed and advised so that they will come to prize the watchful supervision of their employees by physicians quite as much as they value the frequent inspection of their machinery by the competent engineer. It must be shown that industrial hygiene not only serves as a humane work conducive to better relations, but also adds immeasurably to the efficient operation of a factory or other industrial establishment. Workers must be taught to value the preservation of their health as a precious asset from the standpoint of earning power, and also from the point of view that good health is the best and most necessary form of insurance which they can provide for their families against dependency and want.

ABSTRACT OF DISCUSSION

DR. FREDERICS LEE, New York: One matter of which Dr. Harris has spoken has interested me especially. He has mentioned two instances of poisoning by poisonous gases, one where a number of workers were more or less overcome by carbon monoxid, and the other where workers were overcome by carbon dioxid. This brings out one of the important factors which needs to be developed in the study of fatigue and that is the question of ventilation. I wish to cite an instance which has been brought forward, but not yet published, by Dr. Vernon of Oxford. Dr. Vernon investigated certain operations in the tinplate industry and found that the health of the workers varied inversely with the temperature of the outside air: the output of August was 10 per cent. less than the output of January. The highest output occurred in January, when the temperature was lowest. The lowest output occurred in August when the temperature was highest. He found at the same time that this seasonal variation was largely overcome by proper ventilation of the workrooms.

Muscular Tonus in Relation to Fatigue.—In subjects doing relatively strenuous work during the day, or where long hours were being spent in work, there was usually a decrease in the tonus in the evening as compared with the morning condition. This was more pronounced when the subject was losing rest (sleep). After lost rest the morning tonus was lower and the average tonus for the day was less than on days following a good night's sleep. Evidence was thus obtained of cumulative fatigue effects. Sleep at night or during the day was usually followed by a considerable increase in tonus. Strenuous work of short duration was usually followed by an immediate decrease in tonus. Psychic influences (excitement) seemed occasionally to produce an increase in tonus, although fatigue-producing conditions were recorded in the history. In subjects doing relatively light work and obtaining plenty of sleep the tonus varied during the day, the evening tonus being frequently greater than that observed in the morning.—*Pub. Health Rep.* **34**:1622 (July 25) 1919.

THE INFLUENZA EPIDEMIC AND ITS AFTER-EFFECTS IN THE CITY OF BUFFALO

A DETAILED SURVEY*

FRANKLIN C. GRAM, M.D.
Acting Health Commissioner
BUFFALO

Epidemic influenza struck Buffalo with the suddenness of a cyclone. During September, 1918, we had thirty-three cases. October 1, the disease manifested its presence with twenty-one reported cases, and, by October 14, we had the highest number reported in one day, namely, 1,886 cases, with forty-eight deaths from influenza, seven from pneumonia and seven from bronchopneumonia, making a total of sixty-two deaths in one day. This was the peak in the number of reported cases for a single day; after it a gradual decline became perceptible. The highest number of deaths occurred, October 19, with eighty-five from influenza, eighteen from pneumonia and nine from bronchopneumonia, or a total of 112 deaths for a single day. The total number of cases for October was 23,544; in November and December there were 1,846 and 2,975 cases, respectively, making a total of 29,398 cases from September to December inclusive, with a total of 2,561 deaths for the same period from influenza, pneumonia and bronchopneumonia.

TABLE 1.—SUMMARY OF CASES AND DEATHS IN BUFFALO

	No. of Cases			Deaths			
Date Reported	Influenza	Pneumonia	Broncho-pneumonia	Influenza	Pneumonia	Broncho-pneumonia	Total Deaths
September, 1918	33	...	...	5	31	23	59
October	23,544	...	...	1,416	283	196	1,895
November	1,846	...	...	271	60	32	363
December	2,975	...	...	151	52	41	244
Total	28,398	...	...	1,843	426	292	2,561
1919							
January	4,053	140	109	249	58	81	388
February	813	57	62	97	48	46	191
March	187	45	49	19	43	35	97
Total for preceding seven months	33,451	242	220	2,208	575	454	3,237
	242						
	220						
Grand total	33,813						

January showed a considerable increase, with 4,053 cases of influenza, 140 of pneumonia and 109 of bronchopneumonia. There were 249 deaths from influenza, fifty-eight from pneumonia and eighty-one from bronchopneumonia, making a total of 388 deaths. In February the number of cases declined to 813, and in March they came down to 187.

SEPARATION OF INFLUENZA AND PNEUMONIA

Buffalo, in common with other cities, suffered for the want of physicians and nurses when the influenza epidemic struck us in October. Physicians were so overwhelmed with work that it was a physical impossibility to see most of the patients more than once. For this reason, physicians often failed to differentiate between influenza and pneumonia, but reported all cases as influenza. It was only the severest or fatal

* Read before the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

case which received more careful attention and diagnostic accuracy; hence our early reports were complete only in our mortality statistics, and it was not until the crest of the epidemic wave had passed that anything like accuracy in morbidity statistics was possible.

MEASURES EMPLOYED

Verification of Statistics.—Much has been said and written about the inaccuracy of morbidity statistics relative to influenza. When Buffalo found itself in the throes of the disease, the mayor of the city, on the advice of the acting health commissioner, issued a proclamation closing all theaters, moving picture shows, churches, Sunday schools, public schools, parochial schools, private schools, saloons and dance halls, prohibiting, in fact, all indoor gatherings. This proclamation was in force exactly three weeks to the day.

Fortunately, a street car strike occurred during practically the same period. I am satisfied that the drastic proclamation and the street car strike were responsible more than any other measures for the comparatively low morbidity in Buffalo, that being less than 7 per cent.

Organization of Schoolteachers.—By closing the schools, over 2,000 teachers in public schools became idle. Here was an opportunity which I immediately made use of by organizing them and making a house-to-house canvass of the entire city by districts.

With 2,000 teachers at my command I was enabled to accomplish much which otherwise would have remained an impossibility. First, I was enabled to check up the reported cases. As a result of this comparison I found that fully 95 per cent. of all the cases were reported, the remaining 5 per cent. being practically those in which the patients were only slightly ill, therefore deeming it unnecessary to call a physician, or those in which, for some reason or other, it had been impossible to obtain a physician. Second, patients who were seriously ill and unable to obtain a physician were immediately sent to the hospital, in some instances entire families being cared for by sending the sick member to the hospital and the contacts to a temporary isolation hospital. Third, I was enabled to do a great deal of social service by providing food, fuel or other necessities wherever required.

Hospital Facilities.—During the early part of October, a large high school building in the center of the city was quickly converted into a temporary hospital. Another building was used as an isolation hospital for contacts, and a third as a convalescent hospital for such patients as had recovered from the disease but who were unable to return home, or who had no home and were unable to work; or for the many others who were without means and therefore unable to pay for board and lodging. Each one of these three classes was quite large, and the service performed was of the utmost value.

Red Cross Motor Corps.—No report of the influenza epidemic would be complete without special mention of the ambulance service which was organized by the girls' motor corps of the Buffalo chapter of the Red Cross. These young ladies not only drove ambulances, but many their private cars, from long before dawn until far into the night, answering calls, carrying the patients on stretchers from the homes into the ambulances, and again into the hospital, often putting them to bed.

A noteworthy incident is that, as far as is known, not a single motor corps girl contracted the disease.

INFLUENZA AND ITS SEQUELAE

Duration of the Disease.—Our influenza was like a prairie fire—short and drastic. Every influenza patient was either convalescent or dead within five days from the onset of the attack.

Sequelae.—A characteristic of the acute infectious maladies is their proneness to leave certain after-effects, and while the particular conditions liable to follow the principal maladies are generally known, much remains unknown, particularly as regards the determining factors, individual susceptibility and the extent to which each after-effect may be anticipated in a given epidemic visitation.

Influenza is one of the most serious of the infectious diseases, and is capable of exerting its fury on many of the vital systems of the body, so that a wide range of after-effects may be observed. Notwithstanding, it is noteworthy that exact knowledge and data concerning all that pertains to these sequelae are wanting. Writers speak of tuberculosis and bronchial affections, nervous affections, serious affections of the eye and ear, a disposition to awaken latent maladies and create a predisposition to others as among the sequelae, but they do not furnish information as to the ratio of these sequelae to the whole, or of the particular influences that determine them, all of which can have a practical bearing, both in prevention and in general treatment.

The epidemic of 1889 and 1890 showed that the greatest number of deaths did not occur in association with the attack itself, but rather in the following two years, the explanation being that the malady left undermining conditions, weaknesses and lessened resistance, thus rendering the individual vulnerable to subsequent ailments proving fatal.

From this it would appear that the general condition in which the individual is left immediately following the attack is of much importance, the subsequent element of time permitting valuable reconstructive treatment.

THE SURVEY

With the fact in mind that probably no investigation of the numerical relations between the malady and its sequelae had ever been made, and that the findings of the epidemic of 1889 and 1890 showed time to be an important asset in postinfluenzal conditions, I determined to institute a survey of the recent epidemic in Buffalo to ascertain the percentage of sequelae, and, incidentally, to gather such other data as appeared pertinent, and, finally, to secure reconstructive treatment where indicated.

Dr. Herman M. Biggs,[1] health commissioner of the state of New York, said:

> In the last great epidemic of 1890, 1891 and 1892, the greatest mortality occurred in 1891, the second year, although all three of these years showed a larger death rate from the acute respiratory diseases in New York City than had been experienced before for many years. It is not possible to assess even approximately the extent of the loss which influenza has brought and will bring to the country. On the sickness and the death rate we find its malign influence. The present indications would seem to show quite clearly that the deaths from influenza and its complications in the United States during the present year will probably exceed 300,000.

1. Biggs, Herman M.: Review of Reviews, January, 1919.

The *Survey* of Feb. 22, 1919, contains the following:

The Metropolitan Life Insurance Company made a study of its experience among industrial policies following the epidemic of 1889. The results show that the greatest number of deaths from pneumonia and all causes did not fall in the epidemic year, but in the years following—most heavily from 1891 to 1893; in other words, that the patient who survived the Flu was weakened and was carried off by some subsequent illness.

Immediately after the pandemic subsided, I endeavored to determine these conditions in Buffalo by an actual investigation. If we had as a result of influenza a larger number of our people suffering from tuberculosis, heart troubles or other organic diseases, we should by so locating them immediately learn whether they were being cared for by their own physicians and at a time when treatment might be most effective, and if, for any reason, they were not receiving proper attention, we could assist in securing whatever medical or other aid was needed.

With that object in view, I had follow-up cards printed containing the names and addresses of every influenza victim since October 1. I directed the physicians, nurses and inspectors who are regularly employed in the various bureaus of the department of health to take a certain number of cards with them on their daily inspections and attend to this additional work. After about six weeks of effort, only approximately 8,000 such calls had been made, and it became apparent that this method would take too long, and that, if the information relative to influenza victims was to be of any service, it must be had within a shorter time.

I therefore appealed to the mayor and to the city council for a sufficient appropriation to employ extra help and make the investigation immediately. This authority was granted. The field work was done by extra inspectors appointed for the purpose, and paid for by the emergency appropriation. They were given the cards containing the names and addresses of the patients, and instructed to obtain answers to all the questions contained thereon.

These printed cards, used by the canvassers for their field investigations in obtaining an after-influenza record, contained the following:

Name of patient. Address. Number in family. Was father ill? Was mother ill? What other members were ill (giving names and ages)? Are all patients fully recovered? If not recovered, give particulars. Any deaths (give names)? Name of attending physician. Does family need: (1) medical or nursing care; (2) relief or other assistance? Housing. Number of rooms. Sanitation. Special remarks.

This covered the information required for the crude field work. The details were accomplished through subsequent visits by medical inspectors from the department, or by telephone communication with the attending physician.

The city was divided into districts, and an inspector was assigned to ascertain from each person in his own words whether his recovery had been "complete," or, if not, to what his impairment was due, as learned from his attending physician. Those reported as recovered and again performing their usual occupations were immediately classified as such. All patients whose conditions could be considered as properly associated and worthy of scrutiny as to their nature and ultimate possibilities were referred and made subjects of direct communication with the attending physician; if no physician had been in attendance, a physician from the health department was detailed to investigate. Thus, a complete survey was made of all who had had the disease, and, when recovery was not complete, further investigation was pursued in those cases in which it was deemed proper.

The difficulties attending such work are not slight. Individuals are frequently not responsive and resent interference, so that much tact is essential.

The field work occupied a period of approximately two months, but the cards were compiled daily, and cases requiring medical or other aid received immediate attention. In Table 2 are shown the extent and the results of the survey.

TABLE 2.—RESULTS OF THE SURVEY

Total cases of influenza and pneumonia reported from Oct. 1, 1918, to March 31, 1919		33,880
Number of calls made by physicians, nurses and inspectors (without expense) of the department of health	8,000	
Number of calls made by extra canvassers and inspectors	17,699	
Total calls		*25,699
Total deaths from influenza (October to March, inclusive)	2,248	
Deaths from pneumonia	528	
Deaths from bronchopneumonia	403	
Total deaths from these three causes (October to March, inclusive)		3,179
Recovered		28,663
Not located (changed residence)		1,290
Patients not fully recovered		748
Total cases		33,880

* These 25,699 calls covered the 33,880 cases, some families having more than one case.

The character and the number of the sequelae occurring in 748 cases, as disclosed by this survey, are shown in Table 3.

TABLE 3.—CLASSIFICATION OF THE SEQUELAE

Respiratory system	220
General diseases (rheumatism, weakness, etc.)	206
Special senses (ear 51, eye 26, nose and throat 23)	100
Circulatory system	46
Nervous system	46
Urinary system	23
Subsequent infections	19
Alimentary system	14
Miscellaneous (unclassified, pains, etc.)	74
Total sequelae	748
Referred to superintendent of poor for immediate assistance	20
Referred to health centers	15
Referred to bureau of sanitation	9
Referred to school examiners	1
Total referred cases	45

An analysis of the 220 patients reported to have some form of trouble pertaining to the respiratory system was then made by medical inspectors of the department, and led to the information given in Table 4.

TABLE 4.—ANALYSIS OF RESPIRATORY SEQUELAE

Coughs (recovered since original report)	99	
Coughs (improving)	43	
		—142
Tuberculosis:		
Cases reported prior to epidemic	11	
Suspected tuberculosis (still under observation by attending physician)	8	
New cases of tuberculosis (several in families with a tuberculous record)	8	
Suspected tuberculosis (after continued observation and repeated examinations pronounced nontuberculous)	1	
		— 28
"Colds" recovered		13
"Lung Trouble" recovered		12
Miscellaneous (bronchitis, pleurisy, empyema, asthma, etc., recovered)		21
Deaths (from various causes, one being tuberculosis)		4
		220

A further analysis of the 206 cases classified under "general diseases (rheumatism, weakness, etc.)," disclosed that 128 of these patients had recovered and seventy-eight were improving. The subsequent reports on the remaining complications are given in Table 5, showing the final record of recovery and improvement.

TABLE 5.—RECOVERY AND IMPROVEMENT AS REVEALED BY FURTHER INVESTIGATION

Ear:		
Recovered	38	
Improving	13	
		— 51
Eye:		
Recovered	21	
Improving	5	
		— 26
Nose and throat:		
Recovered	19	
Improving	4	
		— 23
		100
Circulatory system:		
Recovered	27	
Improving and under physician's care	19	
		46
Nervous system:		
Recovered	30	
Improving	16	
		46
Urinary system:		
Recovered	18	
Improving	5	
		23
Subsequent infections:		
Recovered	11	
Improving	8	
		19
Alimentary system:		
Recovered	12	
Improving	2	
		14
Miscellaneous (unclassified, pains, etc.):		
Recovered	51	
Improving	23	
		74

SUMMARY

1. A final, detailed analysis, carried out as far as possible to the present time, is exceedingly gratifying, showing that out of 748 cases found on the first examination to have some form of sequelae, 501 patients have since recovered, and 216 are reported as improving. The nature of the reports indicate that practically all of the 216 will, in the near future, likewise be discharged as recovered.

The four deaths reported since the primary investigation may or may not have been due to influenza sequelae. The question is debatable both ways, as no one can say that in the natural course of events the patients would not have died even if they never had had influenza. Only one death out of the four was caused by tuberculosis, and the history of this case was such that, although not a reported case prior to the influenza epidemic, there is a strong probability, according to the history given, that the patient was already suffering from tuberculosis before he contracted influenza.

This brings us down to what, by many health authorities, is considered the most important definite knowledge for practical purposes, that pertaining to the twenty-seven cases of tuberculosis. Out of this number eleven were already on our records as reported cases of tuberculosis before the influenza epidemic began, and must therefore be eliminated from the number which could possibly be charged to influenza.

Eight cases still classed as suspected tuberculosis are under present observation, with no definite diagnosis.

This leaves only eight cases reported since the epidemic of tuberculosis among patients who had influenza, and several of these were in families with a tuberculous record.

2. This survey definitely established the entire after-influenza situation in Buffalo.

3. With more than 2,000 public school teachers at our command for a house-to-house canvass, we established the fact during the influenza epidemic that practically all influenza cases in the city of Buffalo were reported.

4. So far as is known, no other city in the country made a similar canvass during the epidemic, or a similar after-influenza survey.

5. Every possible care was exercised to make both the canvass and the survey as accurate as possible. Both were made by dependable persons. We cross-checked the records. Reexaminations and subsequent visits were made until the status of every case was definitely decided.

6. The fact that only twenty persons who had had influenza required immediate assistance from the superintendent of the poor speaks well for the residents of Buffalo.

7. It is shown that the number of sequelae are relatively smaller than anticipated and that their character was generally not as severe as indicated in many statements issued.

8. The first important observation is the small number of sequelae. As stated, with a malady of such capacity, a greater number would be anticipated.

9. In contradistinction to observations relative to previous epidemics, I do not anticipate any serious results among the persons who had influenza in Buffalo and recovered. Our mortality appears associated and not deferred.

10. While our mortality rate from influenza and pneumonia was large, our morbidity rate was relatively small, being less than 7 per cent.

11. One fact is definitely established, and that is that we have nothing to fear from tuberculosis as a sequela to influenza in Buffalo. I do not consider eight cases with a definite diagnosis of tuberculosis more than we would ordinarily look for among 33,880 individuals.

12. I believe the same may be said of the other cases classed as "improving." This number also is not larger than that which would ordinarily be expected with some organic trouble among so large a number of individuals.

13. The salient features presented by this survey show:

(*a*) The small number of sequel relative to the whole number of influenza cases.

(*b*) Their character, at variance, in general, with the type of sequel and consequences as recorded by most writers.

(*c*) The high percentage of recovery after a period of several months, and the nondevelopment of any considerable number of intercurrent affections, which are apprehended and most prone to develop.

(*d*) The frequent sequel of mild eye, ear and throat affections—100 cases in 748, or about one in seven; and the high percentage of recoveries without permanent after-results.

(*e*) The demonstration, by results, of the value of early and vigorous preventive measures, such as publicity regarding the necessity for personal and general

hygiene; the closing of schools, churches, theaters, saloons, and, in fact, prohibition of every public assemblage or gathering of more than ten persons; the wearing of masks; the use of prophylactic vaccines; the organized facilities and provision for hospital care and treatment; the care and isolation of contacts, and the care of convalescents in suitable convalescent homes or hospitals, and at public expense when necessary.

(*f*) Few cases of sequel affecting the alimentary system (the affections which occurred being of the stomach, and not intestinal).

14. Credit for this showing properly belongs to the Buffalo Department of Health, backed by the mayor and council, for their prompt, aggressive, vigorous and unrelenting measures, instituted at the beginning and maintained throughout the course of the influenza epidemic.

ABSTRACT OF DISCUSSION

Dr. A. Leo Franklin, Cumberland, Md.: I wish to ask Dr. Gram whether we understood him correctly that out of the total of 28,000 recovered patients, examinations were actually made on approximately 748?

Dr. Franklin C. Gram, Buffalo: No. Every case that was reported was examined. The cases of recovery were immediately eliminated, leaving only 748 for special investigation.

Dr. Franklin: In other words, it was estimated that no examination was made of those that recovered completely.

Dr. Gram: That is the effect of it.

Dr. Franklin: If that is the case, I fear that we might possibly go astray if we were to assume from the comparatively limited number of patients who were reexamined, that they were not affected in one way or another by the after-effects of influenza. The experiment made in Buffalo would have been much more valuable if it had been possible to take several thousand of these apparently recovered patients and apply a careful medical examination to ascertain whether there were any after-effects. In Boston, an examination of that kind indicated there were decided after-effects. Similar studies have been made in other cities which seem to give the same results. Similar discoveries are being reported by medical practitioners. There is nothing at the present time that we need to be so careful of as these after-effects of influenza. After the epidemic of 1889 there was a continued high mortality, and it was not until approximately five years afterward that the general mortality of such cities as Philadelphia, New York, Chicago and Boston got back to the normal. Whether this is due to influenza, no one is in a position to say, but I believe we ought to be exceedingly careful at this time not to draw any conclusion not warranted by the facts, and furthermore, it is necessary, in my opinion, to make an exceedingly intensive study in certain communities to determine whether influenza is leaving these after-effects or not.

Dr. E. B. Freilich, Chicago: In October, 1918, at the height of the influenza epidemic in Chicago, the physicians and nurses in the eight dispensaries comprising the field department of the Chicago Municipal Tuberculosis Sanitarium were directed by the commissioner of health to discontinue the regular tuberculosis work and take care of the nontuberculous as well as the patients registered with the dispensaries. We were impressed with the fact that of about 3,500 patients registered at our dispensary, only thirteen were referred to us with influenza. This observation was corroborated by the dispensary physicians in the other districts and as a result a survey was ordered of these cases. Out of 8,500 patients treated, we had fifty-one patients who were registered with the dispensaries; an incidence of about 0.6 per cent. In the Cook County Hospital and in Oak Forest, where advanced cases of tuberculosis are treated, eighty-five cases of influenza were found among 1,551 persons; an incidence of 5.4 per cent. Based on these observations, we concluded that individuals with active tuberculosis had a diminished susceptibility to the influenza infection. On the other hand, in the past six months we have observed in our dispensary clinics, almost daily, moderately advanced and advanced cases of tuberculosis with a history dating back to an influenza attack in the past year. We concluded from our clinical observation at the dispensaries that individuals with latent tuberculosis may have their conditions aggravated by the influenza infection. The attendance at our dispensary clinics has increased largely due to the influenza epidemic on account of respiratory complications following in the wake of the epidemic and on account of the active campaign now being carried on against tuberculosis in our city.

Dr. B. R. Wakeman, Hornell, N. Y.: In Hornell, a city of 15,000 people, 2,896 cases of influenza were reported during the epidemic of October and November, 1918. Early in January we made a postinfluenza survey. Out of this number 700 persons had not fully recovered. Nearly 400 were examined in the clinic by the superintendent of the county tuberculosis hospital, an expert diagnostician. Forty persons were found to have tuberculosis. From January 1 to October 1, 1918, only two cases of tuberculosis had been reported to the health officer. The postinfluenza survey had so stimulated the interest of the community that over fifty cases of tuberculosis have been reported since October 1, 1918. The epidemic possibly may not have reactivated all of these cases of tuberculosis, and this increase may have been due, to a slight extent, to the campaign of publicity. Nevertheless, my personal opinion is that influenza in our locality has materially increased our cases of tuberculosis.

Sir Arthur Newsholme, London, England: Influenza was the reason for much critical newspaper publicity of public health possibilities both in England and in America. One has to realize the importance of public health authorities in facing this bane. In England it was stated that we could get no farther unless we had a minister of health and placed in his hands the machinery for handling influenza! We remain almost helpless in the prevention of acute respiratory diseases in contrast with our control over such diseases as typhus, enteric fever, diphtheria and also tuberculosis. We may hope that with the extensive pathologic and epidemiologic investigations now being pursued, we shall in a few years be able to place these acute respiratory infections on our list of preventable diseases, but we have no immediate hope of this being realized. I was interested in what was said about the relation between tuberculosis and influenza. So far as our national statistics in England are concerned, every years showing an excessive death rate from influenza, has been followed by a year in which the death rate from tuberculosis has been excessive. Many deaths from tuberculosis are undoubtedly hastened during an epidemic of influenza. I was interested in the statement that influenza has been actively present since 1889. Has this been so? Is the recent outbreak the same influenza that we have had each year, or is it another influenza? Do we at intervals from some unknown source obtain a more virulent influenza, or is it an old influenza, which has become more virulent under conditions of which we are at present totally ignorant? That is the problem. It may be one or the other, but the rapidity with which the more virulent influenza spread right through the civilized world under war conditions no doubt facilitated by the immense increase in facilities for conveyance, is one of the most striking things in the medical history of the world. It seems to me that unless medical science is able to prevent ordinary catarrhs and to prevent them from becoming something more serious, it is unlikely that we shall be able to control influenza epidemics.

Dr. Victor C. Vaughan, Ann Arbor, Mich.: As Sir Arthur has said, it is still a question whether endemic and virulent influenza are one and the same thing, varying only in degree of virulence. I am collecting data bearing on this matter and I have one or two things that apparently bear strongly in one direction. In many camps in this country in March and April, 1918, we had typical influenza. It came suddenly, lasted for a few days, and disappeared as quickly as it came. Such an epidemic at Camp Forrest was ably studied and reported at the time by Major Soper. At another camp at

Hattiesburg, Miss., there was in April a division of troops numbering about 26,000. An epidemic of mild influenza struck this camp in April, 1918, and within ten days there were about 2,000 cases. This included not only those who were sent to the hospitals but also those who were cared for in barracks. This was the only division that remained in this country without change of station from April until the fall of 1918. During the summer this camp received 20,000 recruits. In October, 1918, the virulent form of influenza struck this camp. It confined itself almost exclusively to the recruits of the summer and scarcely touched the men who had lived through the epidemic of April. Not only the 2,000 who had the disease in April but the 24,000 who apparently were not affected escaped the fall epidemic. It appears from this that the mild influenza of April gave a marked degree of immunity against the virulent form in October. There is another observation which points the same way. Looking over the statistics of the fall epidemic in cities in the United States we find that certain cities had a low death rate, while others had a relatively high death rate. Among those cities which had a low death rate we will mention Atlanta, Ga.; Kansas City, Mo.; Detroit, Mich., and Columbus, Ohio. Going to the spring records of these cities we find that in all of them in March and April of 1918 there was an unusually high death rate from pneumonia and undoubtedly in these cities at that time there was a relatively mild epidemic of influenza. In this way I am inclined to account for the relatively low death rate in these cities in the fall of 1918. I make no claim that this and other instances of a similar kind prove that the mild and virulent forms of influenza are manifestations of the same disease, but I do hold that the evidence points that way. I want to call attention to the fact that sanitation, as we ordinarily understand it, had no influence on the prevalence or the death rate from influenza.

DR. WILFRED H. KELLOGG, San Francisco: I want to call attention to a very significant fact, which is, that the mortality statistics for the last five years show a very rapid increase in deaths ascribed to influenza. I first noticed in the figures for California that for every succeeding year during this period the reported mortality from influenza has increased. The reported deaths from influenza have jumped to almost double for each year for a period of five years and I observe that this is true also of the reports of the United States Census Bureau for the registration area. Now, this suggestion: That our influenza epidemic was not due to the importation of a virulent strain from Europe but was due to an increase in virulence which was simultaneous throughout the world.

DR. H. D. WOOD, Providence, R. I.: It may not be generally known that during the summer of 1917 there was a streptococcic sore throat going throughout the army. We had it in the West Virginia camps, and they were sent from there into Ohio, Maryland, Virginia and elsewhere. There was no influenza, no respiratory conditions, except the spitting of blood, but the hemolytic streptococcic sore throat spread throughout the United States.

DR. L. I. DUBLIN, New York: We have been for some time engaged in analyzing the returns concerning our company, and it may be of some interest to give you knowledge concerning the preliminary finding. They will point, I think, very significantly to some conclusions. In the first place, we find in regard to this disease, from the mortality returns, that the heaviest instances of the disease are localized, the death rate experience. This experience includes some twelve millions concerning whom we know a great deal. We find from the curve that these increases in mortality rates from the epidemic of influenza and pneumonia are localized in the ages 15 to 50, getting at their height at the ages 25 to 29. That is true not only for the industrial, but the intermediate and the ordinary groups which represent millions of policyholders, affecting one, the same in all three groups, but varying somewhat in the height of the curve. Then, we find a very marked difference in the sexes, 25 or 30 per cent. in favor of the females. Then, there is a marked difference in races. The colored people show a very much lower mortality rate at these same age periods than do the white people. Of course, the curve was the same; the peak was between 25 and 29. There are certain age periods where the effect was virtually negligible, at the age of 50, but at the height of the curve, from 15 to 50, the rate was conspicuously lower for the colored than for the white race. There is also a localized incidence, highest for the males, for the white males, and also localized at from 15 to 50 years of age. Finally, the highest instances are observed along the Atlantic seaboard; that as we go inward, into the interior, we find a lessening of virulence as indicated by the death rate, being lowest as we approach the Pacific coast, with one exception, and that we do not understand. That is San Francisco. It is quite possible, however, that in that city we are concerned with a double infection, that is, one coming from the East and being of a small caliber, and the other coming by way of the Panama Canal, or perhaps from Asia, because the period of highest incidence in San Francisco as in a few other places on that coast, where the figures are available, was the highest curve, and several weeks in advance of interior points. It is, therefore, quite possible that the infection was brought in in two different ways.

DR. CHARLES J. HASTINGS, Toronto: Soon after the declaration of the war that we have just passed through there was a very valuable and significant pamphlet published and circulated broadcast throughout the country, entitled "Know Your Enemy." I think that we had better recognize the importance of this and acknowledge the fact as promptly as possible, that we do not know our enemy in the pandemic we have just passed through. Various organisms have been found present, and numerous strains of each, and there have been cases where they have all three been present and where one only has been present. So that we are not justified in saying that any one of them is the cause of the disease. This being the case, we must assume that we do not know what is the cause of this disease. It may possibly have been a malignant form of the mild influenza of former years. I am sorry to learn that there are yet a few who have some faith in vaccines, and who claim to have had wonderful results from their use. That there is a tremendous amount of virtue in vaccines cannot be doubted, but how can we claim to have a valuable vaccine when we do not know what we are preparing it for? Until we know the organisms that cause the disease, we cannot hope to have an efficient vaccine. We must recognize the fact that vaccine is along the right line. We hope that a vaccine will be perfected and will have the desired results, but do not let us continue to claim that we have an efficient vaccine at present, which I am satisfied we have not.

DR. FRANKLIN C. GRAM, Buffalo: It would be impossible to cover the many points alluded to, but I want to refer to the one that Dr. Frankel presented. We had to eliminate, for the present survey, all those who were found to be recovered and who had returned to their work. A survey of this kind is extremely difficult to make, even at best. When you go to a home, and they tell you that the patient has recovered and has returned to work, it is a difficult problem to follow that case up, as most people resent interference; this is aggravated when you have about 33,000 cases to deal with; for that reason we confined our efforts principally to those who had some form of sequel. The present mortality has been alluded to as being increasing, but in Buffalo it is down to normal. Of course, it is impossible to say what the future will produce.

Effect of Hunger on Moral Qualities of Germans.—A rather important factor is the effect of hunger on the moral qualities. The entire population is suffering from the effects of the food situation. I have been able to observe this among my assistants at the university. Their efficiency, both mental and physical, has decreased. Their mood is one of deep depression, lack of inclination to work, and lack of energy. In the case of many persons, especially among the lower classes, there is observable an inordinate longing for amusement, a phenomenon which we have in former times been able to observe in history during periods of plagues and pestilence. People saw death before their very eyes.—Dr. Max Rubner.

THE FAILURE OF SURGERY ON THE EXTRAHEPATIC BILIARY PASSAGES *

AN ANATOMICOCLINICAL CONSIDERATION *

MOSES BEHREND, M.D.
PHILADELPHIA

Before considering the anatomy of the structures in the region of the foramen of Winslow, it may be profitable to study the relation of the peritoneal bands and adhesions found in this region to the gallbladder, ducts and blood vessels to the surrounding organs and hollow viscera. It is a matter of some importance to decide whether these folds which extend from the gallbladder to the hollow viscera and the great omentum are really inflammatory in character, or whether they are simply developmental embryonal structures. The differentiation is important at operation. Adhesions usually are of denser texture, they are not so easily separated, and usually in themselves they are devoid of blood vessels which require ligation. The bleeding which occurs after adhesions have been separated is usually due to the raw surfaces left. If these bands continue as part of the lesser omentum, one can readily see distinct blood vessels coursing through the fine network of peritoneal tissue, which require ligation after their severance. While it is true that many bands seen at operation are undoubtedly newly formed adhesions due to a previous inflammatory process, there are about 20 per cent. of cases in which the bands are embryologic structures. Flint and others have ascribed them to the rotation of the cecum from its hepatic position. This view is supported by the fact that these bands of peritoneum have been repeatedly found in the fetus and in infants, in whom the opportunity for an inflammatory lesion to be the cause is practically unknown.

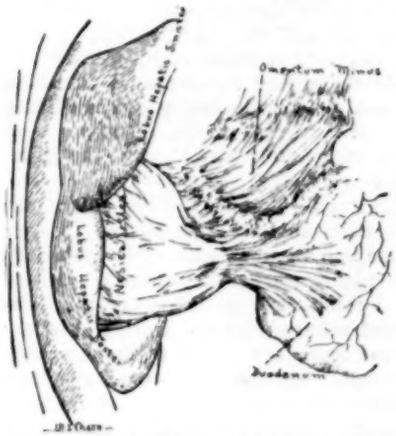

Fig. 2.—Peritoneal band from gallbladder to duodenum and lesser peritoneum; not an inflammatory adhesion.

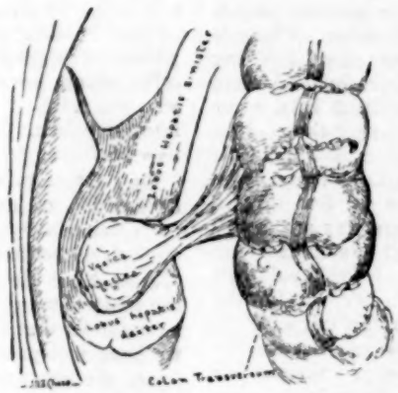

Fig. 3.—Peritoneal band from gallbladder to transverse colon; not an inflammatory adhesion.

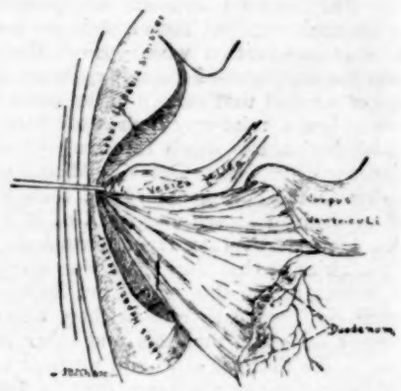

Fig. 5.—Large fan-shaped peritoneal band from gallbladder to stomach and duodenum. Note how the gallbladder is covered.

There are advocates on both sides of the question. Such men as C. H. Mayo and J. M. Flint[1] consider these bands to be developmental in character, while Deaver and Coffee adhere to the other view. I agree with Mayo and Flint that these bands are not all inflammatory. I have reached this conclusion after a careful study clinically and in the laboratory. At operation we speak of these bands as adhesions. Symptomatically these peritoneal bands may give rise to the same pathologic condition as that produced by true adhesions. The treatment will necessarily be the same; the bands must be divided, the organs made more

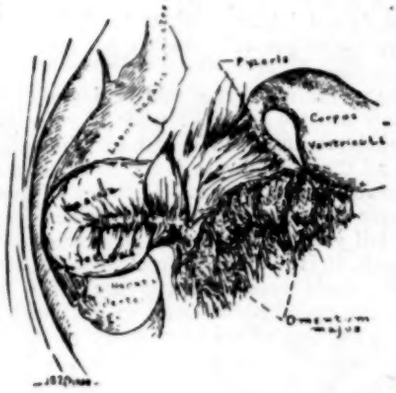

Fig. 6.—Broad peritoneal band from gallbladder to the pylorus and great omentum.

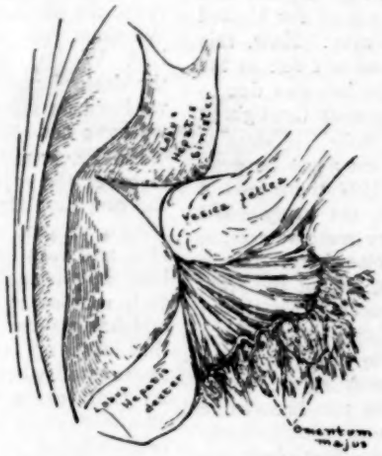

Fig. 7.—Fan-shaped band from gallbladder to the great omentum.

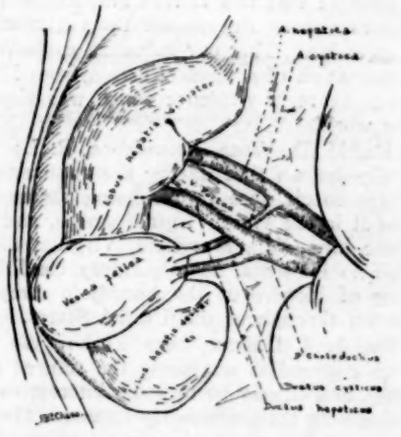

Fig. 11.—The cystic artery and duct in their proper relation. The cystic artery runs under the hepatic duct.

* Read before the Philadelphia County Medical Society, May 28, 1919.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of several illustrations. The complete article appears in the author's reprints.

1. Flint, J. M.: Johns Hopkins Hosp. Bull. **23**: 302-311 (Oct.) 1912.

mobile; the organ which is to be reached can then be readily treated according to the indications.

In Figures 1 to 8, for instance, it would be impossible to perform a cholecystectomy unless these bands have been first divided. This is especially true of Figure 5, in which the entire gallbladder was hidden from view. It is important that the fine blood vessels in these folds of peritoneum be ligated. It will also be noted that these bands are a continuation of the gastrohepatic omentum in many instances, as shown in Figures 1, 2, 4, 6 and 8, supporting rather strongly the advocates under Flint and his school that these bands are fundamentally developmental.

The foregoing has a direct bearing on the subject under discussion, because as soon as these bands illustrated by the drawings are severed, they separate into two layers, thereby disclosing the structures above the foramen of Winslow.

The reports from various sources of the failures following operations on the gallbladder and its ducts may be directly due to the ligation of the cystic duct and cystic artery within the covering of the peritoneum. It is more particularly in those cases in which the common duct has been encroached on that a study of the anatomy of the ducts and blood vessels, and their variations, assist us very materially.

Eliot[2] has reported twenty-three cases in which the common duct was encroached on, twenty-one of which followed a cholecystectomy. About forty-five operations have been performed for the reconstruction of the common duct.

REASONS FOR FAILURE

The reasons for these failures and many that have not been reported are: (1) variations in the ducts; (2) variations in the blood vessels, and (3) poor technic at operation.

1. *Variations of the Ducts.*—The cystic duct was inserted medially in 72 per cent. of the subjects examined. This may be considered the so-called normal type (Figs. 9 and 10).

(*a*) A long cystic duct was medially inserted (Fig. 12). Improper ligation of the cystic duct may lead to the formation of a pseudo gallbladder.

(*b*) The very small caliber of the hepatic duct and the duodenal insertion of the cystic duct which runs parallel to the hepatic duct may be noted. The caliber

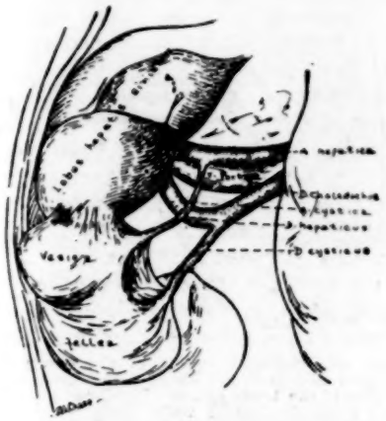

Fig. 12.—Gallbladder is pendulous, attached to the liver by a peritoneal band. Medial insertion of the cystic duct, which is rather long. The cystic artery is also long.

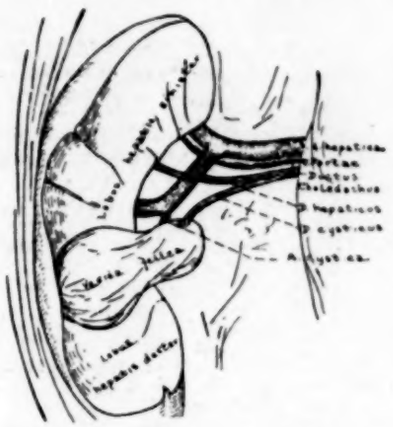

Fig. 13.—The caliber of the hepatic duct is small, the cystic is the same size, and inserts into the common duct close to duodenum. The hepatic artery is large; the cystic artery is very short.

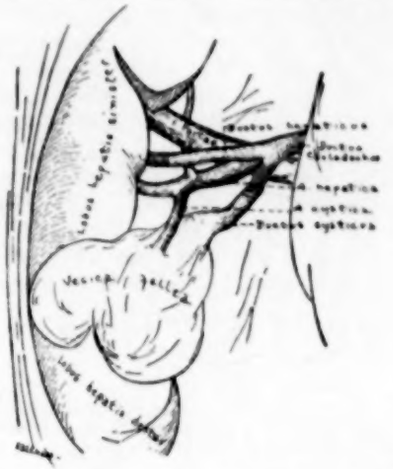

Fig. 14.—The hepatic duct is between the portal vein and the hepatic artery. The hepatic artery is in close relation to the cystic duct, which is inserted close to the duodenum.

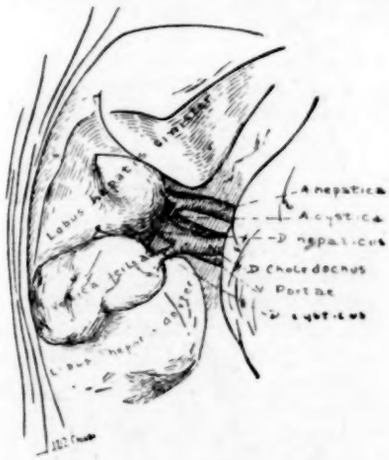

Fig. 16.—All the structures under the liver. A very short cystic duct, medial insertion. The cystic artery under the hepatic duct. A very difficult case in which to perform a cholecystectomy.

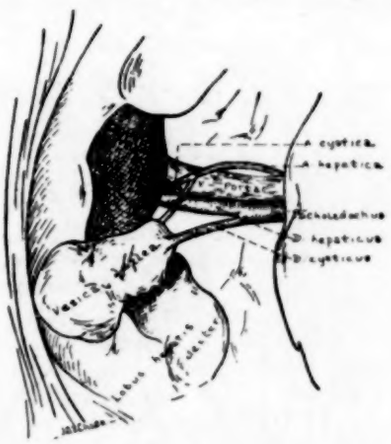

Fig. 17.—Duodenal insertion of the cystic duct. Caliber of hepatic artery small; cystic artery the same size.

Fig. 19.—Cystic duct, measuring 3 inches in length, is inserted close to the duodenum. The cystic artery is very long; it runs under the hepatic duct. Practically no common duct.

2. Eliot, E., Jr.: Surg., Gynec. & Obst. **26**: 81-102 (Jan.) 1918.

of the hepatic duct is the same as that of the cystic duct, a very unusual type (Fig. 13).

(*c*) There was a very short cystic duct of large caliber and in close relation to the hepatic artery. The ducts and blood vessels were of large caliber (Fig. 15).

(*d*) Another source of considerable difficulty is the deep situation of all structures under the liver. All the structures are short; note how the right lobe of the liver hides the hepatic and cystic ducts (Fig. 16).

(*e*) There was an exceedingly long cystic duct measuring 3 or 4 inches in length, and inserted near the duodenum and revealing very little of the common duct. In these cases if the cystic duct is not traced to its insertion and ligated, a condition of pseudo gallbladder will result. Eisendrath[3] and Floerchein report two cases, and the former mentions one other in which this occurred. I had one occur after a cholecystectomy in which the pseudo gallbladder was as large as the original gallbladder removed at a previous operation. While this particular pseudo gallbladder had distinct walls, there was no lining of mucous membrane. The inner wall was stained an indelible green. On account of continued jaundice and symptoms of Charcot fever, an anastomosis was made between the pseudo gallbladder and the duodenum (Fig. 19). This type constitutes 24 per cent. of variations.

(*f*) Peculiarities in the shape of the ducts constitute another source of variation from normal. In Figure 22 the hepatic duct is S-shaped and in close relation to the cystic duct, which is rather twisted on itself. The hepatic duct here could easily be ligated.

(*g*) The cystic duct is inserted on the superior surface of the common duct. The cystic duct is twisted; the cystic artery runs over the cystic duct (Fig. 23).

(*h*) There is an unusual relation of the hepatic duct. It is above and covers the hepatic artery. The cystic duct is of large caliber and will naturally be longer on account of its insertion (Figs. 24 and 25).

(*i*) There is a very short hepatic duct, the cystic duct inserted into the common duct close to the liver (Fig. 27).

2. *Variations in the Blood Vessels.*—On account of variations that occur in the distribution of the vessels, the surgeon may often cut across an anomalous vessel or one whose course has been changed, and in his eagerness to stop hemorrhage may injure the common duct.

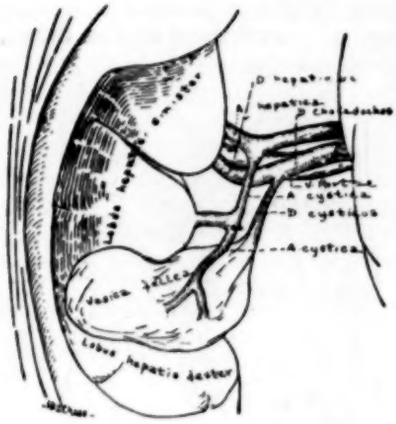

Fig. 20.—Note the transverse branch coming from the hepatic artery and the close relation of cystic duct to this branch.

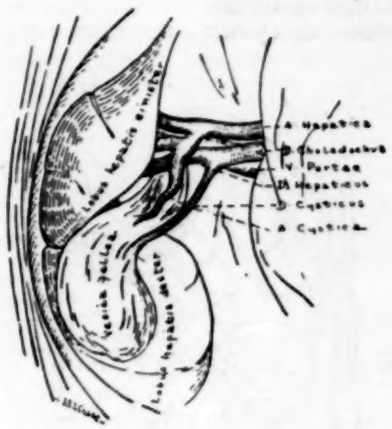

Fig. 21.—Transverse branch from the hepatic artery. Compare this with Figure 20.

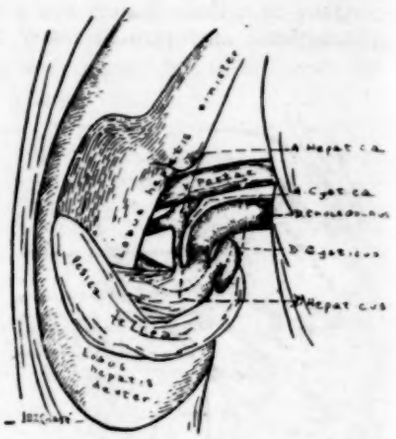

Fig. 22.—S-shaped outline of the common duct and hepatic duct. Cystic duct is in close relation to the hepatic duct. The hepatic duct could easily be ligated while doing a cholecystectomy. It runs under the gallbladder; cystic artery in close relation to the hepatic duct. Cystic duct tortuous.

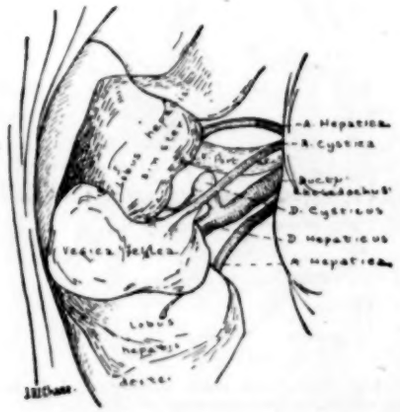

Fig. 23.—The only instance of double hepatic artery coming from different trunks. Tortuous cystic duct inserted on the superior aspect of the common duct. Hepatic duct short. Cystic artery runs over the cystic duct.

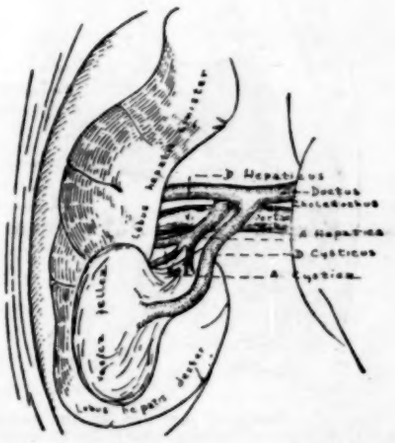

Fig. 24.—Unusual relation of the hepatic and common ducts. The cystic duct is inserted close to the duodenum. Cystic duct large in caliber, unusually long. Two cystic arteries.

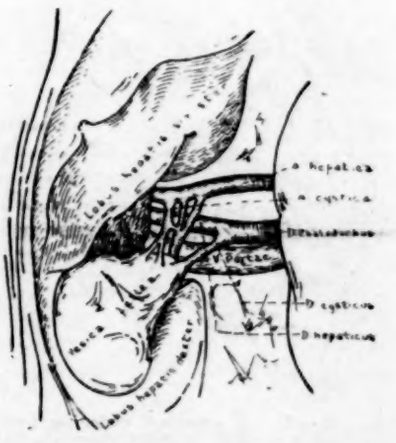

Fig. 26.—Cystic artery branched and anastomosis of the several branches. Portal vein below. Medial insertion of the cystic duct into the common duct, which lies between the hepatic artery and the portal vein.

3. Eisendrath, D. N.: Recurrence After Operations on Biliary Passages, J. A. M. A. **69**: 1752 (Nov. 24) 1917.

(*a*) The cystic artery runs above the hepatic duct in 51 per cent. of specimens examined (Figs. 9 and 10).

(*b*) The cystic artery may run below the hepatic duct. This occurs in 27 per cent. (Figs. 13 and 15).

(*c*) When the hepatic duct and portal vein lie on either side of the hepatic and common ducts, there is danger of injury to these structures (Fig. 14).

(*d*) The cystic artery may be lateral instead of medial. This occurred in only one instance. The cystic artery was of unusual length (Fig. 18).

(*e*) Transverse branches of the hepatic artery may occur above or below the hepatic duct (Figs. 20 and 21). When they occur below the hepatic duct the arteries may be injured, and in our desire to control hemorrhage the common or hepatic duct may be traumatized.

(*f*) The hepatic artery may be double, coming from different branches. This was found in one specimen (Fig. 23).

(*g*) The cystic artery may be branched, and these branches may anastomose with each other. This often gives rise to considerable bleeding after the cystic artery has been considered ligated (Figs. 24, 25, 26, 27 and 28). This occurs in about 16 per cent.

(*h*) The hepatic artery may be tortuous and in close relation to the ducts. It may even cover the ducts, making all sorts of fantastic figures. When this occurs, the cystic duct is in close relation to it and the artery may be injured and even fatal hemorrhage may result (Figs. 29, 30 and 31). When operating on the common duct, it is important to locate it by means of a hypodermic syringe. It often happens that blood is drawn into the syringe instead of bile. It is easily understood how this can be done if one refers to the drawings, especially Figure 31. It is important not to tie the hepatic artery, as this is practically the sole supply of arterial blood to the liver. It is possible that some deaths may result from this accident:

Recently a boy, aged 10 years, was admitted to the Mount Sinai Hospital with the history that a wagon had run over his upper abdomen. He had signs of internal hemorrhage. After a careful search for the source of bleeding, the hepatic artery was found severed. The child was transfused with blood at the time of the operation. He lived two weeks following the operation, but there was a gradual loss of weight, death finally resulting from inanition. We were unable to obtain a postmortem.

3. *Injuries to the Common Duct from Poor Technic.*—The points to observe are the proper placing of the sponges with retraction of the sponges by means of Deaver retractors, so that the gastrocolic and the gastrohepatic omenta can be made taut. Next in importance is the use of the left hand, which grasps the liver and gallbladder, bringing into plain view the structures around the foramen of Winslow. When these points are strictly adhered to, any operation on the gallbladder and its passages can be performed with comparative ease. When a cholecystectomy is performed, the right free border of the gastrohepatic omentum is incised and the cystic duct is isolated and ligated close to the common duct, while the cystic artery is ligated close to the gallbladder. This is a general rule that ought to be observed in performing all cholecystectomies if one wishes to avoid complications. A careful study of the drawings will show that if the artery is ligated close to the gallbladder and the cystic duct is ligated close to the common duct there will be less necessity for secondary operations on the biliary passages.

Finally, when one considers that out of sixty-two specimens examined 33 per cent. of variations of the blood vessels and ducts were found, it behooves the surgeon to study the individual case more closely than he has done in the past.[4]

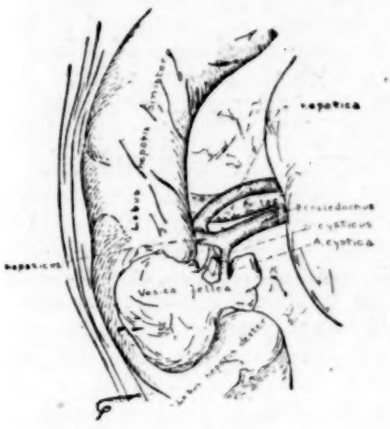

Fig. 27.—Very short hepatic duct, cystic artery double, one branch runninig under the cystic duct.

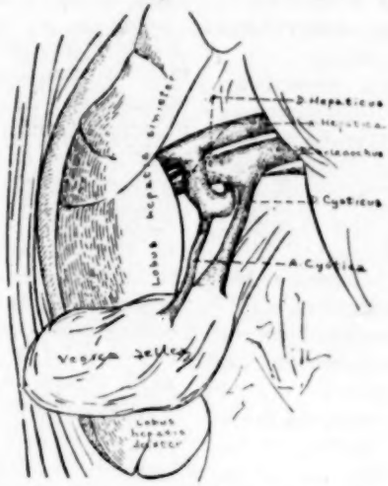

Fig. 29.—Remarkable size of hepatic artery; its tortuous course and its relation to the cystic duct, where it could easily be tied during a cholecystectomy.

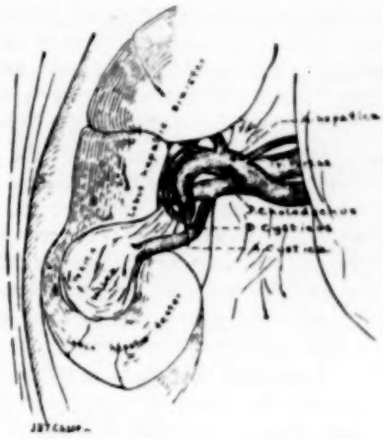

Fig. 31.—Note the course, size, tortuosity and branches of the hepatic artery. A very unusual type. Cystic artery is inserted directly into the cystic duct. The hepatic artery covers almost completely the hepatic and common duct.

4. In addition to the references already given, the following may be found of interest:
Eisendrath, D. N., and Dunlavy, H. C.: Surg., Gynec. & Obst. **26:** 110-112 (Jan.) 1918.
Erdmann, J. F.: Ann. Surg. **67:** 273-277 (Mar.) 1918.
Schachner, A.: Ann. Surg. **64:** 419 (Oct.) 1916.
Werelius, A.: Cholecystectomy, J. A. M. A. **68:** 1545 (May 26) 1917.
Eisendrath, D. N.: Biliary Surgery, J. A. M. A. **71:** 864 (Sept. 14) 1918.
Fowler, W. F.: Surg., Gynec. & Obst. **27:** 387 (Oct.) 1918.
Behrend, M.: Ann. Surg. **68:** 32 (July) 1918.

Child Welfare.—The distinct need for standardizing child-welfare laws is shown by the diversity among the states in child legislation. This variation in standards evidences a lack of clear thinking. A board of children's guardians is needed in every state. Minnesota has adopted a children's code which is a model for all other states in the methods used and the results obtained in legislation.—*School Life*, **2:**2 (May 16), 1919.

CRITICAL PERIODS IN DISEASE TREATED BY BLOOD TRANSFUSION *

EDWARD E. LINDEMAN, M.D.†
NEW YORK

The blood is the highway for the carrying on of traffic on which animal life, from practically the lowest to the highest form, is dependent. It is a very complex tissue, many of the mysteries and intricacies of which are only now being revealed and reduced to the exactness of chemical science. Further research will unfold more, but there will ever remain that realm of darkness, unfathomable by intellect and research, but nevertheless existent.

For this reason, when the facts in the case cannot be reduced to chemical or biologic terms, a certain amount of empiricism in therapeutics must prevail. Empiric therapy will always offer ground for doubt, contention and debate about which reasonable, thinking men may differ. But even in the presence of empiric therapy an unbiased mind and keen clinical observer will obtain much that is of value from blood transfusion in many critical periods in disease.

In order to use effectively the instrumentalities available, it is essential to have a broad, comprehensive grasp of the subject. It may be worth while to call attention briefly to some of the substances in the blood aside from the formed elements with their oxygen-carrying powers and immunologic properties, namely: serum proteins; cholesterin; lecithin; fats; salts; sugars; fibrin ferments; amino acids; elements for synthesis into tissues; products of decomposition, oxidation and hydration; organ extracts; internal secretions; hormones; antibodies; bactericidal substances, etc.

It is apparent that the course of study in blood therapy should be directed, first, to an understanding of the normal blood, and then to a determination, as far as possible, of any excess or deficiency under pathologic conditions. It is not unreasonable to conclude that blood transplantation, in part or in toto, may favorably influence the course of many diseases other than hemorrhage and anemia, in which the indications are not so apparent, and that possibilities are opened for modifying the blood of a donor to meet specific needs in a given case.

REPORT OF CASES

Case 1.—A woman, aged 50, referred by Dr. W. A. Bastedo, had a constant but moderate fever. There were no heart murmurs excepting those of low pitch and rumbling character such as one frequently finds associated with impaired heart musculature. The systolic blood pressure was 102; the diastolic 66. The pulse was irregular and intermittent, varying from 90 to 116. There was multiple joint involvement associated with tenderness and swelling. This condition had existed for a period of five months, and seemed to simulate a form of rheumatic fever.

When I first saw the patient she had a psychosis with frequent attacks of wild delirium and great pain. There was an exaggerated and coarse tremor of the muscles about the joints involved, with considerable rigidity. She was unable to take any nourishment. I agreed with Dr. Bastedo in the opinion that she suffered from a toxic psychosis of infectious origin aggravated by inanition and was soon destined to reach the point of exhaustion. It seemed to all of us associated with the patient that the case was a hopeless one.

The red blood count was 4,000,000 and the hemoglobin 80 per cent. Naturally, anything that would check the infection and reduce the toxicity would be indicated. All measures having failed, we resorted to blood transfusion.

She received in all, four transfusions of blood of between 700 and 800 c.c. at two, three and five day intervals. After the first transfusion there was no apparent change excepting for its quieting influence. After the second transfusion the patient began to take nourishment, and her delirium was less. After the third transfusion, her delirium became increasingly less; she was able to take more nourishment, and her temperature began to fall, accompanied by a slower pulse rate, but one still intermittent. The pain, swelling of joints and tremors were markedly reduced. After the fourth transfusion, the heart sounds assumed a normal quality, the rumbling noises had disappeared, the pulse still remained occasionally intermittent, the psychosis and delirium subsided, her mind was clear, the pain and tremor of the joints were practically gone, and the temperature was normal. The patient was able to consume 2,500 calories a day. Her convalescence was uninterrupted. Some months later, however, she suffered a relapse, I understand, but to a very much milder degree.

I believe that repeated transfusions controlled the infection and reduced the toxicity. In support of this contention I have had a number of cases of infection in which transfusion quieted the patient, reduced the toxicity and overcame the bacteremia, with ultimate recovery of the patient. Whatever else may have occurred I will leave to your own analysis to supply.

I do not regard the fulminating, vicious types of infections, such as occur in the puerperium, or the acute variety in which death occurs within a few days, as favorable types for treatment, for these conditions become fatal before the treatment becomes operative.

The results obtained in malignant endocarditis with *Streptococcus viridans* bacteremia are not encouraging. One's efforts are almost invariably defeated by the lodgment of emboli in the brain, lungs, liver, kidneys, spleen, etc., which ultimately result in the death of the patient.

In long-standing cases of sepsis, even with bacteremia, the patient will frequently arrive at the point at which he has just enough protection to prevent further advance of the infection temporarily. The organism and the host then seem to exist side by side with indifference to each other until one or two conditions will prevail. The host will either overcome the organism, or the organism will advance further so as ultimately to overcome the host. During the stage of indifference, there may be very little or a moderate or a severe grade of anemia, malaise, debility, sapremia and poor nutrition, with absence or poor development of granulations about the infected area. This may be regarded as a critical period in the disease of the patient, and all measures should be directed toward increasing the patient's resistance. Blood transfusion will frequently offer an excellent field for application in these conditions. Infection is controlled, sapremia is reduced, and granulations are stimulated. The patients I have treated in cases that might be included in this group are too numerous to mention. For illustration it may suffice to mention nine cases of sepsis following mastoiditis with operation. In five, positive blood cultures of *Streptococcus hemolyticus* were obtained with five recoveries. In four, the blood cultures were negative in spite of the existence of a very severe sepsis elsewhere secondary to the mastoiditis. In three of these

* Read before the Section on Pharmacology and Therapeutics at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

† Dr. Lindeman was accidentally drowned at Atlantic City, June 12, while bathing.

cases the patients recovered. In the one case in which death occurred, a brain abscess existed, which it is believed was present long before the patient received any transfusions.

CASE 2.—In a boy, aged 11, who had double mastoiditis with involvement of the sinus and jugular thrombosis, the sinus was exposed and the clot removed from the jugular. This clot was found to extend also into the innominate vein, but could not be removed. There was a double septic pneumonia, a right septic pleurisy, osteomyelitis of the head of the left femur, and a positive blood culture of *Streptococcus hemolyticus*, with many colonies to each plate. After ten weeks of treatment this boy became well, excepting for the condition in the femur, which ultimately healed with joint fixation.

PERNICIOUS ANEMIA

The most typical feature in pernicious anemia to me is the variable and capricious course.

The clinical picture differs much according to the stage and specific seats of pathologic invasion. The variability is so great that doubt of accuracy of diagnosis is frequently felt. Most of the cases in my experience, however, of the atypical forms, have proved later to be pernicious anemia of Addison.

Because of the capricious course in this disease, one must be ever guarded in the presentation of any form of therapy, lest one attribute to it virtues which rightfully belong to the natural course of the disease itself. While one sees a favorable change occur in some cases spontaneously, only too frequently does death occur while the favorable moment for improvement is awaited. The number of cases of long course are relatively fewer. Hence, in the treatment of this disease, the skill of the physician and the patience of the family of the invalid may be taxed to the limit.

The story of this disease is too long even to touch on in the time allotted. Suffice it to say that when a patient has arrived at a critical period in pernicious anemia, there is no other therapeutic measure that has the power and efficacy of blood transfusion of unmodified blood in large amounts in robbing the disease of its terrors. Remissions may be provoked. When remissions cannot be provoked promptly, the patient bears the disease better and will be the better able to await the favorable moment for improvement with a prolongation of life.

TROPICAL SPRUE

Tropical sprue is a disease occurring principally in certain areas in the West Indies, Central and South America and northern parts of Africa, where it is found endemic.

There is present a stomatitis; a rough, furrowed and fissured tongue, which may later atrophy, and a severe gastro-intestinal disturbance and diarrhea, which may last from ten to twenty years. There is considerable emaciation and intolerance to iron, meat and other foods. The terminal stage is very frequently accompanied by a severe grade of anemia of the secondary type. Some of the anemias may approach a pernicious type.

CASE 3.—A typical case referred to me was in a man, aged 54, who had frequent attacks of stomatitis and a furrowed and an atrophic tongue. He had had a persistent diarrhea for twelve years, with from four to seven stools daily of the consistency of purée of peas. The patient had been treated by able clinicians, both in Cuba and in the United States. He was placed on a variety of rigid diets and treated by the usual methods employed in this disease. In spite of this, his illness became increasingly worse.

I saw this patient for the first time in October, 1917. He presented a picture of pallor, extreme weakness and emaciation, with very poor appetite and an intolerance for almost any kind of food. The patient, an educated man, had a full realization of the nature of his disease, which was endemic in the country in which he resided. Having exhausted all measures then known for the relief of his ailment, he was unwilling to make further effort. His red blood count was 1,800,000; hemoglobin, 30 per cent.; white blood count, 7,000, and polymorphonucleares, 76 per cent. There was no macrocytosis, and there were no nucleated red cells. He was persuaded to try blood transfusion. He received three transfusions of 1,200 c.c. each, at weekly intervals. The diarrhea promptly ceased, his appetite improved at once, he was able to tolerate all varieties of food, he gained weight daily, and he has been well ever since.

Something more than the mere improvement in the anemia was responsible for the arrest in the disease. The diarrhea so characteristic of the disease exists long before the anemia develops.

I have had four other cases of this disease, with apparent recovery in every case.

CASE 4.—One case occurred in a man in whom the disease existed for a period of about eighteen months. The red blood count was 3,500,000; hemoglobin, 65 per cent.; white blood count, 8,000, and polymorphonucleares, 75 per cent. There was no macrocytosis and there were no nucleated red cells. He received two transfusions of 1,300 c.c. each at an interval of a week. All symptoms of the disease promptly disappeared, and he has remained well ever since.

It is therefore unlikely that the mere improvement of the anemia is responsible for the cure of the disease. Something else has been introduced by blood transfusion which is a corrective for the condition. All of these patients have returned to their homes and are useful citizens in the country in which they reside.

GAS POISONING

Gas poisoning may be regarded in a measure as an anemia, so far as the oxygen-carrying power of the blood is reduced.

CASE 5.—To show what can be done with this condition, it may be worth while to cite a case in a girl, aged 18, who, in January, 1915, was exposed to illuminating gas while asleep in her room, from midnight until 6 a. m. A gas pipe had exploded and the gas had escaped through a small hole in the floor of the room in which she slept. The window and the door of the room were closed. I saw this girl thirty-six hours after her exposure. She was then in deep coma, and there was a general rigidity, more on the right side than on the left, with no response to reflexes except the corneal reflex. One thousand four hundred c.c. of blood were removed, and 1,100 c.c. were transfused. The performance was repeated thirty-six hours later. She then began to show gradual signs of improvement. The rigidity grew less; she began to take nourishment when spoon-fed; reflexes returned and were exaggerated, with ankle and patella clonus. Consciousness, however, was not regained until the eleventh day after her exposure. After that her improvement was uninterrupted, and within two months she recovered completely, with no paralysis or mental disturbance. A severe acne vulgaris, which had existed for several years, cleared up after her transfusion.

I have had a similar experience with a case of tuberculosis, in which a severe acne vulgaris was present for twelve years. The acne cleared up miraculously after three transfusions; only the pitting and scarring of the skin from previous abscesses remained.

In five other cases of gas poisoning, all of the patients but one recovered.

NEPHRITIS

In nephritis, one may encounter a critical period in which blood transfusion may prove helpful. Following is a case in point:

Case 6.—A woman, aged 32, suffered with subacute parenchymatous nephritis during the course of her pregnancy. The urine boiled almost solid with albumin. Many epithelial and white blood cells were found in the urine. The systolic blood pressure was 190; the diastolic, 120. The red blood count was 2,000,000; hemoglobin, 30 per cent. There was a marked pallor and a puffiness of the face, and edema of the extremities She received 1,350 c.c. of blood. Within one week after the transfusion there was no evidence of a nephritis. Casts and albumin were absent, the edema subsided, and all symptoms disappeared. She has been well ever since. The blood pressure was not taken after the transfusion.

Case 7.—I have had a similar result in the same type of nephritis in a patient, aged 45, without the existence of pregnancy. The red blood count was 3,200,000, and the hemoglobin 60 per cent. Recovery occurred promptly after the transfusion, with the disappearance of all symptoms and the absence of albumin in the urine. The woman has been well ever since.

These were cases of primary kidney disease in which the anemia was secondary. It is unlikely that the anemia was responsible for the nephritis. In many extreme grades of anemia there is frequently no impairment of the kidneys. In other cases there is a diminution in the functional activity, with only very slight traces of albumin in the urine. The functional activity, when impaired, improves with improvement in the blood condition.

Case 8.—Another case that may be worth mentioning was of a man, aged 24, suffering with an acute nephritis, the cause of which was unknown. The systolic blood pressure was 190; the diastolic, 112. He had a retention of 210 mg. of nonprotein nitrogen per hundred c.c. The alkalin reserve was 22 per cent. Delirium and acidosis were present. There was a complete suppression of urine for four days. On the fourth day I removed 2,000 c.c. of blood. During the period of removal he was given 500 c.c. of sodium bicarbonate solution in order that he might not be overwhelmed by his acidosis. At the end of the bleeding his pressure fell very perceptibly, and transfusion was then begun. He received 1,200 c.c. of blood. I estimated that the patient was detoxicated 40 per cent. by the procedure. Sixteen hours after the transfusion he passed 560 c.c. of urine, which boiled solid with albumin. The clinical condition, however, was unchanged. He died several days later.

LEPROSY

Case 9.—Blood transfusion was tried in a case of leprosy in a woman, aged 24, suffering with the disease for a period of four years. During this time the disease was active, with areas of anesthesia and thickening of nerve trunks, extreme nervousness, hysteria, poor appetite, lack of ambition, and a mental agony. The patient longed for death. She received in the course of a year six blood transfusions of 1,200 c.c. each. During the past six months the disease apparently has been arrested. Areas of anesthesia are almost gone, the nervousness has subsided, and she no longer talks of death; in fact, she is showing considerable interest in life. Her physicians from Central America, who have recently seen her for the first time since she received her treatment, were greatly impressed with her remarkable improvement and the apparent arrest of her disease.

In another case under treatment at North Brother's Island, the patient has received two transfusions with considerable improvement in his condition. Reports of these cases will be published in full detail later.

ALEUKEMIC LEUKEMIA

Case 10.—A critical period in a case of aleukemic leukemia occurred in a boy, aged 4. I saw this boy for the first time in February, 1916. He was then in urgent dyspnea, and was thrashing about in bed restlessly. The skin was greenish yellow; the lips, blanched. There was a general glandular and marked liver enlargement. The child became unconscious during my examination. Time was not allowable for making blood tests or hemoglobin estimations. The smears showed a picture of aleukemic leukemia. Preparations for a blood transfusion were complete in fifteen minutes. By this time the child was in deep coma, and was rapidly approaching a state of exhaustion. Five hundred c.c. of blood were transfused through the external jugular vein from the mother. Five minutes after the transfusion there was a return of consciousness. Twenty minutes later, as I was about to leave the home, this child, who had just been within a few minutes of death from disease, sat up in bed and laughingly threw me a kiss good-by. He made a remarkable recovery. However, ten weeks later, the disease recurred, followd later by hemorrhage and death.

ANEMIA AND SEPSIS

Case 11.—A case of anemia and sepsis occurred in a baby, aged 3 weeks, in October, 1916. The instrumental delivery of the child was very difficult, and the head was traumatized. A hematoma of the scalp, reaching the size of an orange, developed. The hematoma became infected and ruptured spontaneously. The temperature was 103, the pulse was too rapid to count. The red blood count was 2,000,000, and hemoglobin 26 per cent. One hundred and seventy-five c.c. of blood were transfused from the father through the external jugular vein. The vein offered a little difficulty for the insertion of the cannula, and by the time transfusion had started, breathing had ceased. The child was revived by the transfusion; the temperature promptly fell, and the infant has been well ever since, with normal development.

Case 12.—A case of a different type occurred in a boy, aged 4, who had been operated on for the removal of the tonsils. There was considerable bleeding at the time of the operation. During the week following, though no more bleeding occurred, the child grew increasingly paler. He became very restless, occasionally vomiting, and was unable to take food. Skin petechiae were scattered over the trunk and extremities; there was no blood in the stools.

I received an urgent call in this case at 4 p. m., one week after the operation, and was on my way at 4:30 p. m. in a race against death, up hill and down dale and around mountain sides, for a distance of 60 miles. I arrived at 7 p. m., and found the little patient comatose, restless, and in urgent dyspnea, with extreme pallor. He was placed on the operating table immediately, and 500 c.c. of blood were transfused from the mother through the external jugular vein. Consciousness and color at once returned. The restlessness and dyspnea, however, had not diminished to a degree commensurate with the therapeutic procedure. If this child suffered from hemorrhage alone, the dyspnea and restlessness should have entirely disappeared. On further examination, the child's breath revealed the presence of acetone. Sodium bicarbonate was administered during the night, followed by a complete recovery the next day. The boy has been well ever since.

HEMORRHAGE

In cases of hemorrhage, blood transfusion is specific, no matter how extreme the hemorrhage, provided some life is still present. After an experience I am about to relate I am prepared to say that there is no condition so grave, from hemorrhage alone, that a patient cannot be revived by blood transfusion.

Case 13.—A man, aged 54, who used alcohol to moderate excess, was operated on, after several attacks of gastric pain and vomiting of blood, for gastric ulcer, in January, 1919. The ulcer was excised, and a gastro-enterostomy was performed. The course, for a period of ten days after the operation, was uneventful. Between the tenth and sixteenth days

after the operation, the patient had daily attacks of weakness, after which he vomited bright red blood. During this time his stools were dark and tarry. I saw this patient for the first time at 11 p. m. on the sixteenth day after his operation. He was very pale and weak; the pulse was 120, and the blood pressure very low. There was no increase in respiration and no dyspnea. I obtained a specimen of blood from the patient in order to make the necessary hemolytic tests. As I left his room he called me back to inform me of a sudden attack of weakness. Realizing the gravity of an attack of hemorrhage at this stage, I returned within two hours with a suitable donor. Everything was in readiness for a transfusion.

During my absence the patient became increasingly weaker, and on my arrival he was unconscious, with marked dyspnea and in shock. His respirations soon became paralytic in type, the head was thrown back. The respirations then became fewer and fewer until they were mere occasional gasps. The attending physician could feel no pulse. A tourniquet was placed on the patient's arm, but the veins did not distend. It was necessary then to make a small incision, exposing the medium basilic vein. Not a single capillary bled at the site of incision. There was no blood in the medium basilic vein; it presented itself, when exposed, as though it were a nerve trunk, and it looked like a piece of flat white tape.

By this time the patient stopped breathing, and no heart sounds were audible with the stethoscope. It requires but a few seconds to deliver blood by the syringe-cannula system, but even these few seconds were too precious to lose, and cold saline, which was the only thing at hand, was pumped into the vessels by my assistant until blood transfusion was started. Sixty c.c. of saline were introduced in the interim. After the patient received 200 c.c. of blood, he took an inspiratory gasp, followed by a paralytic expiration. When he had received 400 c.c., he was breathing more regularly; a flicker of pulse was perceptible. When he had received 600 c.c., there was a decided improvement in the pulse and an increasing depth of respiration. He opened his eyes and stared, but was not conscious. When he had received 800 c.c., he became startled, as though suddenly awakened out of a sound sleep, and wanted to know what all the fuss was about. The transfusion was stopped when the patient had received 1,200 c.c. The pulse and respiration were then quite satisfactory. He was then fully conscious, and breathing normally.

It may be worth while to note that when he became conscious he had no realization of his close proximity to death, and if he had reached the brink of the great unknown there was no spiritual or psychic evidence of it.

It is impossible to describe to any audience the extreme and dramatic clinical condition. I have never seen it before or since, and I expect never to see it again, namely, in the presence of all evidence of death from hemorrhage, revival was yet possible by blood transfusion. I believe the possibility for revival was a matter of a very few seconds, a second, or even a fraction of a second. I therefore contend that there is no condition so extreme from hemorrhage alone, if the heart still beats or is in a state of fibrillation, that revival is necessarily impossible with blood transfusion.

At the time the blood was obtained for hemolytic tests, there was a complete absence of fibrin in the specimen. The reason for the patient's bleeding then became quite obvious. The diminution or absence of fibrin occurs occasionally in cirrhosis of the liver. The liver in this patient was small. In all probability a degree of cirrhosis existed. I have learned by experience that when the fibrin content of the blood is diminished or absent, there is great liability to recurrence of hemorrhage, even after transfusion, and this emergency was therefore anticipated. Six days later the patient again had a severe hemorrhage, and bright red blood was vomited. He was transfused at 4 p. m. At twelve o'clock that night he again had a hemorrhage, and at 2 a. m. he was transfused, after which an exploratory operation was performed. Bright red blood was found in the stomach, with a few small shreds of fibrin. The stomach and duodenum were thoroughly explored, and the intestine examined. No evidence of a bleeding point was obtained. The mucosa of the stomach generally was somewhat thickened and boggy, but otherwise normal. The patient was transfused immediately after the operation. He made an uneventful recovery and has been perfectly well ever since.

The statements herein contained are facts without exaggeration. They are used to call and direct attention to the use of blood transfusion in critical periods in many diseases, even when a severe form of anemia is absent. A great many more cases could be cited, but I trust enough has been said to stimulate an interest.

565 Park Avenue.

IODIN TINCTURES, WATER SOLUBLE*

TORALD SOLLMANN, M.D.
CLEVELAND

Proprietary preparations of iodin have been on the market for many years and advertised to physicians as superior to the official preparations—tincture of iodin and Lugol's solution (Liquor Iodi Comp., U. S. P.). The superiority claimed for these proprietary preparations is based on the allegation that the potassium iodid in the official preparations causes a local irritant action which is avoided in the proprietary preparations. The allegations seem improbable—certainly the local irritant action of potassium iodid must be regarded as negligible, as compared with that of hydriodic acid contained in the proprietary preparations. Rather, it was surmised that any difference in local irritation following the use of the proprietary preparations was due to the fact that the iodin content in these preparations was insufficient to produce the irritation or, on the other hand, sufficient to have only a slight, if any, therapeutic effect.

The manufacturers do not seem to have published, and presumably do not possess, any comparative data on the degree of irritation produced by their preparations, as compared with the official tincture of iodin after this has been diluted so as to reduce its iodin content to that of the proprietary preparations. It was therefore decided to determine this point by applying various iodin preparations of an equal iodin content to the skin and also by extending the experiments in other directions. In these experiments two widely advertised proprietary preparations—Burnham's Soluble Iodin[1] and Sharpe and Dohme's Surgodine[2]—were included.

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* From the Department of Pharmacology of the Western Reserve University School of Medicine.

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1. Examination in the A. M. A. Chemical Laboratory indicated Burnham's Soluble Iodin to be a solution of iodin in alcohol made miscible with water by the presence of some iodid and containing approximately 3 gm. of free iodin and 2 gm. of combined iodin in 100 c.c. (J. A. M. A. **50**: 1055 [March 28] 1908).

2. The A. M. A. Chemical Laboratory reported that Surgodine was an alcoholic liquid containing 2.51 gm. of free iodin and 1.78 gm. of combined iodin, probably present chiefly as hydrogen iodid, in 100 c.c. (J. A. M. A. **70**: 257 [Jan. 26] 1918).

Since these, however, are more or less secret in composition, I have devised a nonsecret preparation of the same character by the use of hydrogen iodid (hydriodic acid). The details of this preparation will be published in a pharmaceutical journal. Before use, each of these preparations was reduced by the addition of alcohol to a free iodin content of 2.2 per cent. (2.2 gm. in 100 c.c.).

COMPOSITION OF IODIN PREPARATIONS USED*

Nature of Preparation	Free Iodin	Percentage of Combined Iodin (Including HI)	Acidity as of HI.
Alcoholic solution	2.2	0.4	0.2
U. S. P. tincture (KI)	2.2	1.6	0.07
Alcohol with HI (author's formula)	2.2	0.7	0.6
Burnham's Soluble Iodine	2.2	2.7	1.4
Surgodine	2.2	1.2	0.8

* The numbers represent grams per hundred c.c. of preparation. Before use, each preparation was reduced with alcohol to a content of 2.2 per cent. of free iodin.

The accompanying table shows the composition of the solutions used, the total iodin being the same, the principal difference being in the acidity, which ranges from a minimum of 0.07 per cent. in the U. S. P. tincture (containing potassium iodid) to a maximum of 1.4 per cent. in Surgodine. The special preparation which I devised is intermediate and contains 0.6 per cent. The total combined iodin (including potassium iodid or hydrogen iodid) ranges from 0.4 per cent. in the alcohol solution to 2.7 per cent. in the Burnham preparation.

EFFECTS ON THE SKIN

The solutions were painted on the skin of the inner surface of the forearm, each solution covering an area of from 15 to 20 mm. diameter; each application was allowed to dry before the next was added.

The results did not show any significant or constant differences. The actual results indicated that Burnham's preparation was the more irritant, and the U. S. P. tincture (reduced to the same iodin percentage) was the less irritant, but the differences were so small that they could easily be accidental.

In a preliminary test with three applications, no material difference could be detected between the different solutions.

In a second series, a measured quantity of solution was applied to two spots in three courses. The first course consisted of five applications at intervals of five minutes, and then a pause of thirty-five minutes. At the end of this time, the skin of all the areas was slightly tender. The second course consisted of five applications during sixteen minutes, and then a fifty-five minute interval. There was now considerable tenderness, alike for all the areas. The third course comprised five applications during fifteen minutes. Forty minutes after the last application, all the areas were equally sore. The depth of the stains ran in decreasing order from Burnham's (most) through Surgodine, hydrogen iodid, U. S. P. tincture, and alcoholic (least); but the differences were not great.

After removing the excess of iodin with alcohol, the reddening and edema at this time appeared as follows: Burnham's most, distinct papular edema and reddening; then the alcoholic; then the others, which were about alike.

On the following morning, the order of irritation was as follows: most, both Burnham's areas; next, one of the alcoholic areas; next, one of the hydrogen iodid areas; next, Surgodine; least, U. S. P.

PRECIPITATION OF ALBUMIN

Irritation is often due to precipitation of proteins, and this probably applies to the irritant action of iodin. Therefore an investigation was made to determine whether there exist significant differences in this respect between the several iodin preparations.

Each of the diluted iodin preparations (2.2 per cent. iodin) was diluted with 10 volumes of water, to avoid precipitation of protein by the alcohol, and the diluted solution added to an equal volume of a 10 per cent. solution of natural egg-white in physiologic sodium chlorid solution.

The simple tincture, that with hydrogen iodid, Burnham's preparation, and Surgodine, produced an apparently identical coagulum. The U. S. P. tincture (diluted in the same way) produced only a turbidity; this also when the quantity of the iodin solution was doubled. Next morning, the albumin was coagulated as with the others. The reaction to litmus remained neutral.

The restraining action of the potassium iodid is limited, for the addition of an equal quantity of the potassium iodid tincture to the hydriodic acid tincture does not prevent immediate coagulation (1 volume potassium iodid tincture, 1 volume hydrogen iodid tincture, 10 volumes of water).

It is evident, therefore, that the potassium iodid of the official tincture has a restraining effect on the coagulation of protein. This would tend to make it less irritant than the other preparations. It is conceivable that this may be disadvantageous in skin protection, in which the fixative action is probably desirable. In this case, however, there is no object in using a water-miscible preparation, and the simple alcoholic solution of iodin would be fully as good as any of the others.

CAPILLARITY AND SPREADING

Dilute tinctures of iodin, when placed on the skin or on parchment, tend to distribute themselves so that the solution becomes most concentrated at the periphery (as in the accompanying illustration). In this manner, the periphery of an application on the skin may be blistered when the center is scarcely affected. If this property were more marked in one specimen than another, this would be equivalent to greater irritation. The illustration shows that this uneven distribution runs in the order: U. S. P. (potassium iodid tincture), most; Burnham's soluble iodin; hydrogen iodid tincture; Surgodine; alcoholic tincture (containing no potassium iodid), least.

The differences are in favor of the simple alcoholic tincture (which was formerly official) and adverse to the tincture containing potassium iodid (which is now official); but they do not impress me as of great importance, since they are even less marked on the skin.

I tried also to demonstrate differences in capillarity by the spreading or rise through filter paper; but the variations were insignificant.

CONCLUSIONS

The presence of potassium iodid in the official tincture of iodin does not seem to render this preparation more irritant. On the contrary, it is somewhat less irritant to the skin, and much less precipitant to proteins, than the simple alcoholic tincture, or the secret and nonsecret "miscible tinctures." The more even spreading and the more rapid coagulation of protein render the simple alcoholic solution of iodin probably the best for the "disinfection" of the skin; while the delayed protein precipitation by the U. S. P. tincture

would probably render this somewhat superior for the disinfection of open wounds. The secret and non-secret "water-soluble tinctures" do not appear to have any material advantages.

REACTIONS FOLLOWING THE ADMINISTRATION OF ARSPHENAMIN

REPORT OF REACTION IN A SERIES OF TWENTY-FIVE THOUSAND INJECTIONS *

WILLIAM H. GUY, M.D.
PITTSBURGH

So much publicity has been given some isolated instances of serious reactions following the intravenous administration of arsphenamin that it seems worth while to tabulate the number and type of reactions seen in the course of a large number of injections of the drug, together with an attempt at classification of these reactions, more particularly with reference to their causes. At Camp Travis, Texas, we have given well over 25,000 injections of arsphenamin and have attempted to keep a record of reactions as they occurred. In classifying and reporting this series it is pointed out that reactions following the administration of arsphenamin are not so well understood that every case will automatically fall into any well defined group, either by virtue of certain classical symptoms or because of established etiology; nor can all reactions be avoided by the observation of certain fixed rules of technic: there are too many factors involved. Reactions necessarily have their origin in drug toxicity, technical errors, or in causes relative to the patient himself. Many reactions are undoubtedly due to drug toxicity, but there seems to be a deplorable tendency on the part of some to condemn the drug without sufficient consideration of other possible etiologic factors, particularly those relating to technic.

Just what constitutes a correct technic varies widely in the opinion of equally eminent authorities; but certain essentials have been established as the result of clinical observation and animal experimentation. Thus, most clinicians report fewer reactions when using dilute solutions, and we are informed that in animals[1] "a dose of arsphenamin which is well borne when given slowly for fifteen minutes will be surely fatal when injected in one minute in concentrated solution."

Ehrlich,[2] as early as 1911, pointed out the advantage of using dilute solutions. Just what dilution is best is an open question, varying, according to the opinions of different men, from 0.1 gm. to 3 or 4 c.c. up to 0.1 gm. to 50 c.c. of fluid; but most will agree that reactions are more frequent when using a concentration greater than 0.1 gm. to 15 c.c. Pollitzer[3] states that 0.1 gm. to 20 c.c. will yield approximately a normal solution and should cause less disturbance in the blood stream. Salt solution as a diluent has been shown to be not necessary; but freshly distilled sterile water is considered essential, although there are those who believe that ordinary tap water will give just as good results. Wechselmann,[4] in the early days of arsphenamin, laid great stress on water impurities as a source of reactions. Certainly the source of any water not freshly distilled and sterilized will have some bearing on results. Danysz[5] believes that reactions are due to a precipitation of arsphenamin base in the blood stream owing to the carbonic acid present; various factors, such as the rate of injection, alkalinity and the salt solution, as well as the amount of acid in the blood, having a definite relation to the number and severity of reactions seen. He recommends small initial injections to vaccinate against reactions by increasing the amount of organic bases in the blood. Small preliminary injections may prevent some reactions; but at the same time we must consider the possibility of producing a resistant strain of spirochete, thus defeating the object of all therapy. Again, by such methods, much valuable time will be lost, particularly in dark field positive cases with negative Wassermann reactions. Herxheimer reactions can hardly be explained by Danysz's theory; such reactions have in my experience developed after small injections of the drug. Since oxidation products of arsphenamin are quite toxic, it is wise to inspect each ampule for possible air leaks and to use the solution as soon after it is prepared as possible. Chemically pure sodium hydroxid is necessary as chemical impurities have been demonstrated to produce reactions. Incomplete neutralization of arsphenamin has probably accounted for more avoidable reactions than any other one factor.

Schamberg, Kolmer and Raiziss[6] state that acid solutions of arsphenamin are from 50 to 60 per cent. more toxic than the alkaline. Again, one should observe carefully the rules laid down by manufacturers regarding the preparation of their particular brand of arsphenamin; in dissolving the arsenobenzol brand, one may with safety use hot water; but with salvarsan (Metz) cold or at best luke warm water should be used. To prevent undissolved particles from entering the circulation, the solution should always be filtered before it is used.

As to the selection of the brand of drug to be used, we recognize that different brands of arsphenamin vary considerably in toxicity, and that different lots of the same brand vary to such an extent that methods of standardization are necesary before the drug is released for therapeutic use. The Public Health Service prescribes that manufacturers shall test each lot for arsenic content and toxicity. It is required that the arsenic content be not less than 29.5 per cent. nor more than 31.6 per cent. For the toxicity tests, five albino rats, non-pregnant, weighing from 100 to 150 gms., are injected with a 2 per cent. solution of the neutralized drug in doses of not less than 80 mg. per kilogram of body weight. It is required that 60 per cent. of the animals survive at least forty-eight hours. If more than one of the rats die, the tests are repeated and the total number counted in the result. Special rules regarding the care and feeding of animals are issued. Manufacturers' results are checked by the Hygienic Laboratory of the United States Public Health Service, thus assuring the profession a comparatively nontoxic product. In addition to these tests, manufacturers in this country supply a few ampules from each lot to some clinic, where a further check is made on the product for its human toxicity. Varia-

* Read before the Section on Dermatology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Circular letter C-263, Surgeon-General's Office.
2. Ehrlich, P.: München. med. Wchnschr. **37**: 1963 (Jan.) 1911.
3. Pollitzer, S.: J. Cutan. Dis. **34**: 633 (Sept.) 1917.
4. Wechselmann, W.: Deutsch. med. Wchnschr. **37**: 481 (March 16) 1911.
5. Danysz, J.: Ann. d. l'Inst. Pasteur **31**: 114, 1917; abst. J. A. M. A. **71**: 596 (Aug. 17) 1918.
6. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: J. Cutan. Dis. **35**: 795 (May-June) 1917.

tions in toxicity are, however, still possible, and as a matter of fact are still encountered, presumably because one brand or some particular lot of the same brand of arsphenamin may pass toxicity tests much higher than prescribed by the federal authorities. The two American manufacturers,[7] whose products were used in this series state that their brand is being tolerated in much greater dosages than that prescribed in the official tests. Thus, one might expect that any brand of arsphenamin would be comparatively safe; and yet there may be an excess number of minor reactions with one, because it just managed to pass the government toxicity requirements. Of these 25,000 injections, about 15,000 were of the arsenobenzol brand and about 10,000 were of the salvarsan brand. The arsenobenzol brand has made the better record of the two preparations. With the first lots of the salvarsan brand, reactions occurred twice as frequently as with the arsenobenzol brand. With the last few thousand injections, little difference in the two brands could be noted. It is noteworthy that the last 1,000 injections were given with only three reactions of any moment.

But with the best of technic and with a drug that is comparatively nontoxic, reactions will be encountered that have their origin in the patient himself. Reactions necessarily bear some relation to the relative functional integrity of the various organs; incompetent renal, hepatic, pulmonary, digestive, etc., functions account for many reactions that would otherwise be lacking. Also the temperament of the individual has some bearing on the frequency of reactions; what is a terrible ordeal to one individual is only an incident to another. Again, the status of the syphilitic infection itself has something to do with the incidence of reactions. Goubeau[8] attributes most febrile reactions to the disease itself, such reactions being noted most frequently in the florid secondary stage of the disease. Berman[9] believes that most reactions are due either to acidity of the drug or an increased protein, especially globulin, in certain active syphilitic infections. Our own experience has been in support of such a theory. It seems reasonable that some reactions are due at least in part to the destruction of enormous numbers of spirochetes, liberating the protein of their bodies into the blood stream with the production of an anaphylactic type reaction. It has been our experience also that patients with elevated temperatures or with demonstrable pathology of almost any kind will not tolerate arsphenamin well. We have seen a few cases with aggravation of syphilitic pathology due to the administration of arsphenamin.

TECHNIC

Since so many reactions are properly ascribed to technic, a brief outline of the technic used in our work is in order before the report of reactions encountered is presented.

1. The usual preparation of the patient is ordered.
2. A general physical examination precedes the beginning of treatment, and a urinalysis is made before the injection of either arsphenamin or mercury as a routine measure.
3. Instruments, glassware, etc., are sterilized by boiling.
4. Ampules are floated in alcohol to detect those not intact.
5. Ampules are opened and the drug dissolved in sterile distilled water, hot water being used only with the arsenobenzol brand.
6. The solution is neutralized with 15 per cent. sodium hydroxid to complete precipitation and clearing, after which a few drops in excess are added.
7. The solution is filtered and then diluted by running sterile distilled water through the filter until each 0.1 gm. of the drug is contained in 20 c.c. of fluid, the temperature of the solution being approximately that of the blood stream. Finally the solution is tested with litmus for alkalinity.
8. The solution is then placed in graduated glass cylinders hung about 3 feet above the level of the table, and supplied with tubing leading to a needle connection.
9. With the patient reclining, the bend of the elbow is cleansed with alcohol or painted with iodin, a small piece of gauze being placed just below the site selected for the injection. An assistant grasps the patient's arm just above the elbow, the patient closing his fist to distend the veins.
10. The check valve on the tubing is released, the operator pinching off the flow of the solution with the thumb and index finger of the left hand. The needle is held in the right hand, being introduced first through the skin and then into the vein.
11. On obtaining a flow of blood on the gauze, the assistant releases the arm, the patient opens his fist, and connection is made with the solution. Dosage is estimated at the rate of 0.1 gm. to each 30 pounds of body weight, and the requisite amount of the standard solution allowed to flow into the vein. The tubing is then disconnected from the needle, which is withdrawn after allowing a few drops of blood to wash it out, and a gauze compression is made over the site of the injection until all bleeding has stopped.
12. Following the injection, patients rest in the ward for an hour and a half, after which they are returned to their organizations, excepting those patients with infectious lesions who are kept in the hospital until all lesions have healed.

REACTIONS

We may include in the group of reactions due to technical errors those that developed in men that either disregarded instructions regarding preparation or were injected without preparation in special instances, as in early primary lesions in which the diagnosis had been made by the dark field method. Of the latter, eight of approximately 150 vomited within an hour after receiving a full therapeutic dose of the drug. Nothing further was noted except nausea preliminary to emptying the stomach, and later injections were without reaction, including twenty-five cases in which injections were given on each of three successive days after the method of Pollitzer.[3] The rest of our series of primary lesions (dark field positive), numbering 350 all told, were given the usual preparation the night before, and four of them were nauseated and emptied their stomachs. About eighty men in all stages of the infection who had had no preparation developed more or less severe reactions referable to the gastro-intestinal tract. From questioning patients at random I am convinced that at least every fourth one failed to carry out his instructions regarding preparation for one reason or another and still had no reaction. Cold solutions, I am sure, counted for three successive reactions with a moderate chill. On one occasion, the still being out of order, we used tap water, and five of forty men injected complained of shortness of breath, were flushed, and after a period varying from fifteen minutes to an hour, vomited and complained of intestinal cramps. Gonder's[10] observation that small amounts of calcium and magnesium in water increased the frequency of reactions is of interest in connection with these cases when we find that there is a comparatively high content of these two elements in the water

7. Personal communications to the author.
8. Goubeau: Paris méd. **8**: 97 (Feb. 2) 1918.
9. Berman, Louis: The Nitritoid Crises After Arsphenamin Injections, Arch. Int. Med. **22**: 217 (Aug.) 1918.
10. Gonder, R.: Arch. f. Schiffs- u. Tropen-Hyg. **16**: 37, 1912.

supply at Camp Travis. Three cases of rather severe thrombophlebitis were seen that may have been due to the local implantation of infection, or more likely, I believe, the result of an infiltration of the drug between the coats of the vessel. The inflammatory process was an ascending one beginning at the site of injection and extending up the arm. These patients complained of pain and tenderness along the course of the swollen, inflamed and thrombosed vein, accompanied by an aggravated aching pain located rather vaguely at the shoulder. A moderate febrile reaction was noted, persisting over a period varying from ten to twenty days. Cold applications and splinting gave the most relief in these cases; all of the patients made uneventful recoveries, a hardened, sclerotic vein, however, persisting. On one occasion, when a new lot of salvarsan (Metz) was used, thirty-five severe reactions developed in thirty-five patients injected. Each had a severe chill from forty minutes to an hour after injection, the chill in some cases lasting as long as two hours. During reaction from the chill the patients vomited repeatedly, and a febrile reaction developed that in five cases persisted for three days. Nausea and vomiting persisted in one case for forty-eight hours. Intestinal cramps and diarrhea were present in twenty cases. Marked prostration lasting from twenty-four hours to a week followed in all cases. An albuminuria developed in thirty cases, in three of which numerous red blood cells and coarsely granular casts were also noted. All urines were clear ten days after treatment. No marked increase in blood pressure was noted. On the third and fourth day there appeared a herpetic eruption involving the lips, buccal mucosa, lobes of the ears, perianal region and penis in most of the cases. A polymorphonuclear leukocystosis was noted in every case, reaching its height during the second and third day and then gradually subsiding. The count was usually from 12,000 to 15,000, but in three cases it went as high as 50,000. These three cases showed two per cent. eosinophils and were the ones in which there occurred the most severe reactions. Slight fragility of red blood cells was noted in the more pronounced cases. All patients were entirely recovered and back on duty within two weeks, and have since taken arsphenamin without reaction. Later in the day we gave several tubes from another lot of the same product without reaction. This led us to believe that we were dealing with a particularly toxic lot of arsphenamin, and further administration of the lot was stopped.

On inquiry we found that the lot in question had passed the required toxicity tests at 80 mg. per kilogram of body weight, and that the lot had passed clinical tests before being released. We then decided to try out the lot further and gave 100 tubes without any save one or two very mild vasomotor type reactions, proving conclusively that the cause of these reactions lay in faulty technic rather than in the drug itself. The technic used was the standard technic as outlined, and the same that has been used before and since with the best of results. The sodium hydroxid (Merck) was freshly prepared, and the same solution was used subsequently without any trouble. The one source of trouble seems to have been in the water; that used was some of the first from a new still, and had stood in a new tank for about four hours before we used it. Just why this water gave such a serious lot of reactions I am not prepared to state, unless they were due to bacterial or chemical contamination, the result of standing in the new metal tank. Emory[11] was able to demonstrate that reactions occurred more frequently when traces of lead and mercury were added to the water. Yakimoff[12] referred to the effects of water contamination by endotoxins of *Bacillus coli* and *B. pyocyaneus* in the same manner. Water from the same source has been subjected to chemical and bacteriologic tests with negative results, but this work was done after the tank had been drained and filled again so that the results obtained have been of value to us only in showing that the water supply is now what it should be. I have reported my notes on these cases in considerable detail because they illustrate how easily one may lay the blame for reactions unjustly on the brand of drug that he happens to be using. I am convinced that a good proportion of cases reported in the late literature as true toxic drug reactions were in reality due to errors in technic, or to causes relative to the patient himself.

It is difficult to place properly those reactions due to the drug itself. One must first eliminate every other source, and that is often quite difficult. We daily have patients speak of peculiar odors, tastes and sensations during administration of the drug. Such phenomena seem to be due to the drug itself. Innumerable instances of this kind have been noted and have rarely been followed by toxic manifestations of any kind. Two patients complained of severe pain radiating over the distribution of the dental nerves, one requiring an opiate. Vasomotor reactions with flushing of the face, dyspnea, cough and precordial pain we have seen in but 120 isolated instances, and in nearly all of these, with recourse to epinephrin and a few minutes' wait, we were able to finish the injection without further trouble. Schamberg, Kolmer and Raiziss[6] believe that these early reactions are due to traces of an unknown impurity which they call substance X. We were not able to demonstrate consistently any excess of reactions of this type with any particular lot of the drug. In one case a generalized subcutaneous edema with lowered blood pressure persisted thirty-six hours in spite of epinephrin. A generalized urticarial eruption developed in two cases. A mild generalized dermatitis developed after eight weekly injections, persisted for three weeks, and then the patient made an uneventful recovery. A generalized pruritus developed an hour after the administration of a single therapeutic dose, and persisted for ten hours. A chill, followed by a fever and usually vomiting and diarrhea, was noted in twenty isolated instances.

Of particular interest to me has been a group of about forty cases in which reactions developed that could be shown to be due to an aggravation of a nonsyphilitic pathologic condition. For instance, several men who had a few bronchial râles at the preliminary examination developed a moderate chill, cough, and generally a rather severe aggravation of mild bronchitis. One of the patients, recently an influenza victim, developed bronchopneumonia in the same manner. Patients with yellow sclera developed a marked icterus in only three of many similar cases. There were two with an aggravation of previously noted urinary findings following the cautious exhibition of the drug. Most patients with evident mild chronic

11. Emery, E.: Bull. Soc. franç. de dermat. et de syph. **24**: 37, 1913.
12. Yakimoff, quoted in Abhandlungen über Salvarsan, **13**, 1912.

interstitial nephritis tolerated the drug well. Contrary to what we expected, no unfavorable results were noted in five proved cases of pulmonary tuberculosis. In another case of the same kind, arsphenamin could not be given, because with each injection there would be an exacerbation of pulmonary symptoms. Generally we noted that men with elevated temperatures, except those due to the syphilitic infection itself, did not tolerate the drug well. Fischer,[13] in 1915, in an analysis of published deaths from arsphenamin, stated the belief that most of the deaths were due to some unsuspected disease, and that all the evidence at hand exonerated the drug of most of the mishaps credited to it. While we find it difficult to dismiss the subject so easily, still it seems reasonable to believe that some of the reactions attributed to drug idiosyncrasy have in reality been due to some unsuspected pathologic condition.

We have had two cases with early reactions in which we were forced to the conclusion that a drug idiosyncrasy existed. In one case an alarming train of symptoms developed after each injection of the drug. About three hours after receiving arsphenamin this patient developed a chill, vomited, and was quite prostrated. His heart action became weak and irregular. His symptoms persisted from forty-eight to seventy-two hours, even with comparatively small doses of the drug. Epinephrin did not seem to be of any use. Finally, a mild dermatitis appeared on the forearms, and further injections were temporarily discontinued. After a period of about four months, following the suggestion of Stokes,[14] a preliminary hypodermic injection of 1/50 grain of atrophin sulphate was given and 0.3 gm. of arsphenamin injected without any reaction whatever. Unfortunately this man was released, and further data on the case are not available. In the case of the other patient, with practically identical symptoms, but milder, we were able to administer arsphenamin, by giving 0.1 gm. as a preliminary injection, and following that with the rest of the injection in an hour. We have found it to be advantageous to inject the drug very slowly in these cases. The method of preliminary small injections suggested itself in connection with Danysz's[5] recommendation that all first injections of the drug be small ones to vaccinate against future reactions. Of delayed reactions we have seen six examples. These patients had no trouble until the third or fourth day after injection, when they developed a train of symptoms differing but little from those seen earlier. The onset was more gradual, as was convalescence, and prostration seemed greater than with the usual type of reaction. These reactions usually occurred after the patient had had two or more injections of the drug. We have noted a second reaction of the same type in two patients. This, coupled with the fact that delayed reactions are comparatively infrequent, has led me to believe that such reactions occur as the result of individual peculiarity, or an unsuspected pathologic condition.

Of Herxheimer reactions we have seen only a few. One man with mucous patches developed a severe glossitis following the injection of 0.4 gm. of the drug. Two showed marked aggravation of throat ulceration following the 0.3 gm. preliminary dose recommended by the War Department. In another case, mucous patches became confluent, and with extension of the larynx produced a complete aphonia which persisted for several weeks. It is my opinion that Herxheimer reactions are the result of the stimulating activity of nonsterilizing doses of arsphenamin, and that they may be avoided by full therapeutic dosage.

There have been two fatalities that may be ascribed in any way to antisyphilitic treatment in this series. Approximately 3,000 patients have been treated, some for a short time on account of transfer of station, and others over considerable periods. In one case, after two 0.4 gm. injections four days apart, the patient developed an acute dilatation of the stomach, death occurring on the ninth day. Necropsy revealed nothing of interest except that arsenic could not be found in any of the viscera. This patient had taken arsphenamin before without reaction according to his statement, and so, since this was only one of a group of 165 injected the same day, we feel that this case must represent one of an unsuspected underlying pathologic condition or one of drug idiosyncrasy. The other case was that of a soldier much overweight, but otherwise as far as we were able to determine, quite normal. He received 0.6 gm. of arsphenamin, and after a seven day interval another of the same size. He also received two injections of 1 grain each of mercuric salicylate. According to routine, the urine was examined before each injection of arsphenamin, and found normal. On the third day following his last injection of arsphenamin, he reported to his regimental surgeon for mercury. At that time he stated that he felt quite well except for some local tenderness in the buttock following the previous injection of mercury. The urine was not examined. He was given 1 grain of mercury, and the next morning was found unconscious in bed. A catheterized specimen of urine which revealed almost a solid coagulum of albumin, was loaded with blood and granular casts. He died the same day and at necropsy we found an acute diffuse hemorrhagic nephritis. Thus we may again point out the necessity of routine examination of urine before each injection of either arsphenamin or mercury.

Owing to the fact that most of our patients are handled on the ambulatory plan, reporting from organizations by appointment, receiving their treatment, waiting an hour and a half, and then returning to their commands, necessarily there have been some reactions that we have not seen; but since regimental surgeons were instructed to send all such patients to the hospital as soon as they were seen, we feel that any that did so occur were of minor importance.

While my classification of these cases may not meet the approval of all, and many of my opinions and statements are open to just criticism, yet I feel that the total picture presented is worthy of consideration in that it tends to strengthen the growing conviction that arsphenamin as marketed today is a comparatively safe product.

Since this article was written, the toxicity requirements for arsphenamin have been raised to 100 gm. per kilogram of body weight.

500 Pittsburgh Life Bldg.

13. Fischer, B.: Deutsch. med. Wchnschr. **41**: 965 (Aug. 12) 1915; abstr. J. A. M. A. **65**: 1147 (Sept. 25) 1915.
14. Stokes, J. H.: Atropin and Induced Antianaphylaxis, J. A. M. A. **72**: 241 (Jan. 25) 1919.

ABSTRACT OF DISCUSSION

Dr. William Allen Pusey, Chicago: I want to express my great appreciation of the very admirable character of Dr. Guy's paper. It seems to me that it is the sort of paper that does a great deal of good. There is only one thing in which I would criticize it, and that is his tendency

to give a clean bill of health to the drug when anything happens to the patient. It is surprising when you have good arsphenamin how carelessly you can use it and have no trouble. When you remember how it is being given all over the country with any sort of technic it is a remarkable tribute to arsphenamin. And yet, when a man like Dr. Guy who uses a technic which is beyond criticism, has some trouble, the suggestion immediately is that there was something wrong with the lime content of the water. You can give arsphenamin in an acid solution and in some cases the patient will have no reaction, literally no reaction, and yet they come and tell us that if any accident happens, it is because we have not used a chemically pure hydroxid solution or the patient has got a little lead from the glass or something of that sort. You have given him 4 or 5 grains of arsenic and yet they tell us he has died from an infinitesimal dose of lead.

DR. HAROLD N. COLE, Cleveland: I would like to report two cases of dermatitis exfoliativa following the use of arsphenamin. In one case, the dermatitis developed after the last injection of a series of six given about two weeks apart. The other patient who had had six injections of the arsenobenzol brand of arsphenamin developed the exfoliative dermatitis about three days after the last injection. In both cases there was a high temperature, reaching to 104 F., and in the case of the male the temperature has persisted after all evidence of dermatitis has gone. In the female it had been present for about two weeks when I last saw her. There were no symptoms from the kidneys in either case, except a slight degree of albuminuria.

DR. HENRY MICHELSON, Minneapolis: I wish to supplement Dr. Cole's case. We had a patient in Dr. Sweitzer's service who developed an exfoliative dermatitis three days after the third treatment with the arsenobenzol brand of arsphenamin. We made a blood culture and found *Streptococcus viridans* and, therefore, thought that, instead of the injection, was the cause of the dermatitis.

DR. FRED WISE, New York: I am sorry that I cannot give any definite figures, but after administering the arsphenamin in the Vanderbilt clinic in thousands of cases we have not seen one case of dermatitis resulting from its use.

DR. WILLIAM H. GUY, Pittsburgh: Dr. Pusey's remarks are certainly quite apropos, but he is not quite just in his criticism. When one meets with thirty-five reactions in thirty-five patients injected, and later uses 100 tubes of the same lot without reaction, proof positive of faulty technic or materials is at hand. I have attempted to be fair in all of my statements, and while I would not have you think that arsphenamin is fool proof, yet I do believe that this report amply supports my opinion that arsphenamin as marketed today is a comparatively safe product.

ARTERIOVENOUS ANEURYSM

REPAIR BY FREE VESSEL TRANSPLANTATION *

STERLING BUNNELL, M.D.
SAN FRANCISCO

The report which follows is one of an operation for arteriovenous aneurysm of the femoral artery at the junction with the profunda artery. In the operation, a free transplantation of vein was made.

REPORT OF CASE

History.—A private in the San Francisco base hospital in France four weeks previously had been shot by a machine gun bullet, which entered the right thigh, passed through the femoral artery and vein, then through the right pubic bone, through the bladder, and on out through the left buttock. For a few weeks the urine escaped through the left buttock, and then the fistula closed.

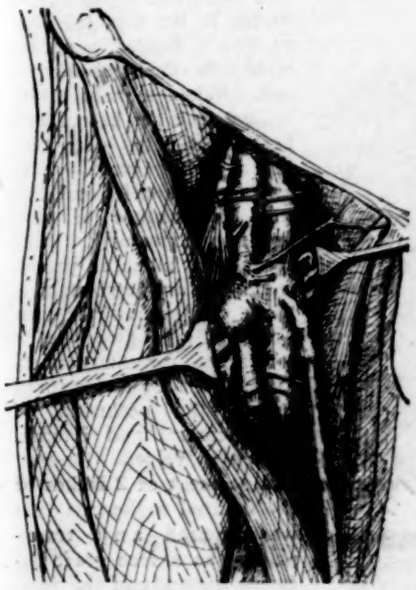

Fig. 1.—Condition of aneurysm as found. Profunda artery and vein enter sac posteriorly.

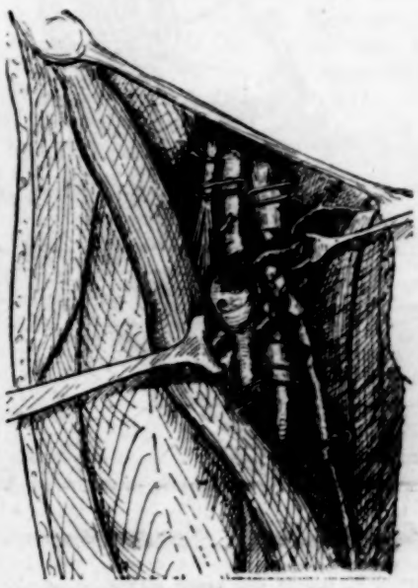

Fig. 2.—Condition of vessels confronting for repair. Through the opening in the femoral artery can be seen the mouth of the profunda artery. The cut ends of the internal saphenous, profunda and femoral veins can be seen.

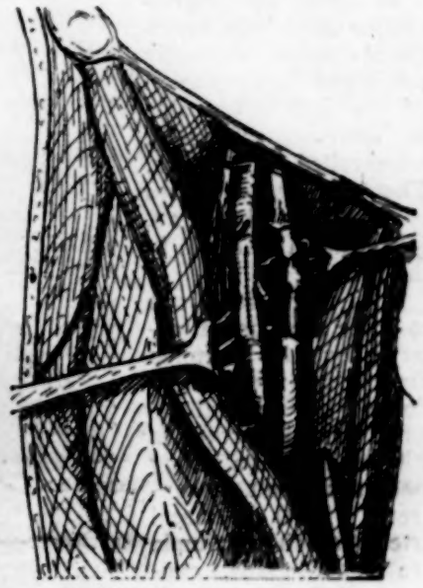

Fig. 3.—Completion of vessel suture, showing graft of internal saphenous vein with two valves into gap in femoral vein; lumen of femoral veins narrowed by suture for end to end suture with graft; lateral suture of femoral artery, and ligation of profunda vein.

Examination.—There was a red, expansile pulsating swelling 4 by 2½ inches, with considerable ecchymosis extending widely over the thigh. Pain was complained of. There was a strong thrill over the swelling, which was transmitted for several inches up the vein. A very loud and characteristic bruit could be heard, not only over the tumor, but also over the iliac vein, the abdominal vena cava, and even in the back over the thoracic part of the vena cava. It sounded like the puffing of a locomotive, and its distribution showed that the aneurysm was arteriovenous in type. There was, in the leg, no distention of the surface veins with transmission of the bruit and venous pulse, distally, as it was later found that there were two valves in the upper end of the internal saphenous vein, as shown in the graft in Figure 3. The color

* Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL by omission of a review of the subject with comments. The complete article appears in the reprints, a copy of which may be obtained on application to the author.

and warmth of the leg, when it was at rest, were normal; but there was no pulsation in the dorsalis pedis or posterior tibial arteries.

Prognosis.—From the large size of the aneurysm, a spontaneous cure could not be hoped for. The prognosis in such a case is bad. Though the disappearance of arteriovenous bruits in the external iliac and femoral veins has been reported, a spontaneous cure of arteriovenous aneurysm is rare, and not to be expected. A simple arterial aneurysm is much more likely to undergo spontaneous cure than is an arteriovenous one.

The dangers were: increase of size; pressure symptoms, such as occlusion of the vein and collateral vessels, with resulting gangrene; embolism; sudden and fatal hemorrhage, and inflammatory changes.

In an arteriovenous aneurysm, these complications, though always impending, are a little less likely to occur than in arterial aneurysms, because of the opening into the vein. The proximal vein furnishes an open exit for the arterial stream and also acts as a safety valve, protecting the sac to some extent from the poundings of the pulse wave.

In cases of arteriovenous aneurysms, nutritional changes eventually set in, and the circulation of the limb is not able to increase sufficiently when called on for work. There is a tendency to cyanosis, coldness, lymphedema and pain in the limb.

It is more dangerous to ligate the femoral artery above the profunda than below it. A ligation of the femoral artery below the profunda will usually, in a young man, not result in gangrene. If the femoral artery and the profunda are both ligated, gangrene of the leg is practically certain. It was necessary, therefore, in operating in the present case, to plan some plastic work on the vessel rather than ligations.

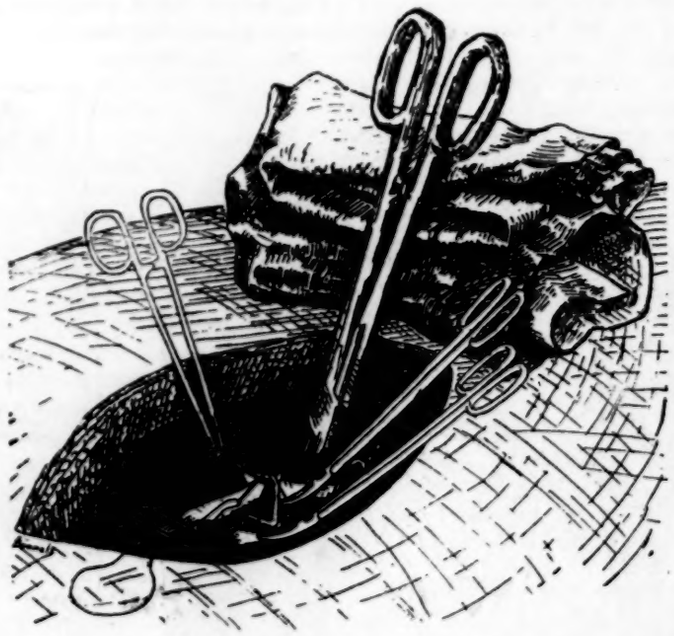

Fig. 4.—Method of end to end vessel suture, using wire crotch to hold guide sutures and serve in the place of an assistant.

Operation.—The external iliac artery and vein were first exposed and occluded by the use of paper clips. These were found to be entirely adequate for vessels of this size and gave a gentle pressure that did not injure the vessels. The femoral artery and vein below the tumor were also exposed and occluded by clips. The intermediate vessels, including the aneurysm, were then dissected out. Scar tissue of the bullet tract enveloped the aneurysm. There was a general fusiform swelling, an inch in diameter, of the femoral artery and vein. A saccule projected from the antero-external surface of the artery, and an opening 1 cm. in diameter joined the artery and vein (Fig. 1). In the course of the dissection several holes soon developed in the front wall of the aneurysm, which was of poor consistency; and it was necessary to keep a thumb on these holes to prevent copious hemorrhage. The vessel had been clamped above and below, but the blood would gush from the profunda artery and vein that came up directly beneath the aneurysm. As the thumb, which was preventing the hemorrhage, was held directly over the profunda vessels, the dissection and the clamping off of these vessels was impossible. This furnished a predicament which was difficult. Pressure on the abdominal aorta would stop the flow from the profunda artery, but not that from the profunda vein. It was necessary to excise the aneurysmal part of the femoral vein and to tie each of the six venous tributaries that came into the aneurysm.

In the femoral artery, the opening into the saccule and that into the vein were trimmed with scissors into one opening. The mouth of the profunda artery, as it emerged from the posterior part of the femoral artery, could be seen directly beneath the hole that was trimmed out in the femoral artery. Figure 2 shows the condition of the vessels at this stage. With No. 16 Kirby needles and No. 0-9 black silk, a lateral suture of the artery was made. This left only a slight constriction of the lumen of the artery, so that at this point the diameter was a little over half the normal. Suture, rather than ligature, is indicated, even if but one-third the lumen is retained. In this case, a transverse suture line was impossible, as the vessels could not be stretched longitudinally. On releasing the clamps on the artery (the distal one first), the blood stream was reestablished.

The provision for a venous return for the leg next confronted us. In this case, the profundus and internal saphenous veins were cut, and there was a gap of 1½ inches in the femoral vein, so that if ligated, gangrene would be the probable result. When a main artery is ligated, it has been found best to ligate also the accompanying vein. This gives a balanced circulation and less chance of gangrene. Conversely, when the artery alone is patent, it is necessary to reestablish also a venous return. Joseph Blake gives as an indication for amputation, in the case of a fractured femur, the occlusion of both femoral and internal saphenous veins.

A segment of 2 inches of the internal saphenous vein was excised and transplanted as a free graft between the ends of the femoral vein. The length was made ample to avoid tension. Vessel ends, when cut, retract. I have read of stretching them out and by so doing overcoming gaps, but I have never found this to be possible. Nor does it seem commendable to overcome gaps in vessels by flexion of joints. As the caliber of the transplant was much less than that of the femoral vein, and especially as the femoral vein had been considerably dilated by the arterial pressure, it was necessary first to reduce the caliber of the ends of the femoral vein by suturing half way across the lumen of each. Then, end to end unions, with the graft, were made (Fig. 3).

I believe it desirable to deviate, in suturing vessels, from the orthodox method, as laid down by Carrel, in not smearing the tissues with petrolatum. Petrolatum is objectionable in that it provokes the formation of serum in wounds, tends to prevent tissue surfaces from healing together and encourages infection. Instead of using petrolatum as a preventive measure against the clotting of blood, I use a 1 per cent. solution of sodium citrate, washing the vessels and keeping the field wet with it. I am confident of the merit of this deviation in technic, as with it I had uniform success in making free transplantations of vessel segments in dogs.

A mechanical aid, which greatly facilitates the delicate work of suturing vessels, is the small wire crotch, as shown in Figure 4. The guide sutures are held closely and steadily by it, so that the sewing is made easy. The hands of the assistant are not in the way, and the part to be sutured is free from the influence of their tremor. The crotch is held stationary and in a vertical position by the heavy clamp, which rests on the field, and the guide sutures are transferred from one crotch to the other as the suturing progresses. There is thus presented in turn, for suture, each of the three sides of the triangle. I prefer my original form of crotch,[1] though various adaptations of the principle have been published since my description of it.

Postoperative Result.—At the completion of the operation, the leg was somewhat cyanotic from the long time that the vessels were clamped. A pulse could be felt in the femoral artery distal to the part repaired.

In an hour the cyanosis cleared, and from then on the temperature, color and appearance of the two legs were equal. The thrill and bruit were gone, and did not reappear. The pulse could not, at first, be felt in the dorsalis pedis. This was evidently because the pulse wave was interrupted by the narrowing of the caliber of the artery at the suture line, as in a week the artery, having had time to dilate at its narrowed caliber, the pulse in the dorsalis pedis made its appearance and remained present. There were no subjective symptoms. In three weeks the patient was allowed to get up and go about, and his leg gave him no trouble. In a letter from him written May 5, 1919, five months later, he stated that since his operation he had had no circulatory trouble in his leg; that he had a complete absence of such symptoms in the leg as cramps, coldness, weakness, heavy feeling or pain, and that he was able to feel the pulse in the dorsalis pedis and posterior tibial arteries as well as in his normal foot. As an additional test of the circulation of the leg, an open wound, which he had through the dorsum of his foot, healed soon after the operation.

1. Bunnell, Sterling: An Aid to Vessel Suturing, Surg., Gynec. & Obst. **10**: 312 (Feb.) 1910.

BOTULISM FROM CANNED ASPARAGUS *

CHARLES THOM
RUTH B. EDMONDSON
AND
L. T. GILTNER
WASHINGTON, D. C.

Sickness and even death from the ingestion of spoiled food are repeatedly mentioned in the literature. Much of the information offered however is vague. The identification of the actual type of decomposition responsible for these cases has been usually incomplete. Such reports leave hope neither for relief from the suffering of the individual nor of proper safeguards against further poisoning. Recently the work of Dickson[1] followed closely by the report of Nevin[2] led to the identification of *Bacillus botulinus* as one cause of poisoning cases occurring in America. Botulism has been regarded as rare, apparently because the cases that occurred went unrecognized. The discussion in the literature, although presumably adequate, failed to identify the poisoning cases which actually occurred. A considerable series of such cases in man and domestic animals have been described by Dickson,[3] Dickson and Burke,[3] Burke,[4] Buckley and Shippen,[5] Shippen,[6] Graham, Brueckner and Pontius,[7] and Graham and Brueckner.[8] The toxicity occurrence and conditions of growth of *B. botulinus* are thus becoming better defined.

The study of actual material involved in such cases may be expected to furnish means for the detection and elimination of danger from such foodstuffs. In January, 1919, four persons died in Boise, Idaho, as a result of eating asparagus that was taken from the jars and served cold in a salad. A portion of this salad, three jars of asparagus canned in the same pack as that used in the salad, and the cap of one of the two jars whose contents were incorporated in the salad were secured by W. T. McCall, state club leader of Idaho, and forwarded for investigation to his chief, O. H. Benson, States Relations Service, Department of Agriculture, Washington, D. C. These were given to the Microbiologic Laboratory of the Bureau of Chemistry for study. Clinical reports of three of these cases follow:

REPORT OF CASES

CASES 1 and 2 (Report of Dr. S. M. Forney).—About noon of Jan. 8, 1919, I was called to see two colored people, a man and a woman. From the woman I learned: That morning both she and her husband awoke feeling normal. A few hours later he began to feel a choking sensation in his throat; his voice became husky and he had a feeling of weakness (paralysis) beginning in the feet and creeping upward. At the time I called (2 p. m.) he was unable to talk; but he could understand and answer by shaking his head. He had no pain; breathing was labored, pulse rapid. The wife was beginning with the same symptoms, but these were not as yet so marked. She complained of a choking sensation and swelling in her throat but was able to tell what they had eaten the night before, nothing since, etc. They were ordered to the hospital. Before the ambulance arrived the husband died and the wife died on the road to the hospital, apparently choked to death. There were seven negroes at the meal. Five ate asparagus, four of whom died within thirty-six hours. The fifth escaped though he ate heavily of asparagus. I saw only the husband and wife mentioned, but the others died as these did.

I afterward learned that the asparagus, which we suspected at the time, was home-canned, cold-pack method with single sterilization, and that at the time it was opened one woman remarked that it smelled spoiled. The host answered: "It can't be. I canned it myself."

CASE 3 (Report of Dr. H. M. Holverson).—In the case of C. H., she with a party ate of canned asparagus at 4:30 p. m., Jan. 7, 1919. It was noticed at the time of eating that the asparagus did not taste just right. No symptoms were noted until 9 o'clock of the following morning, when she first

* Detailed results of the pathologic work will be published later by Dr. Giltner.

* From the Microbiological Laboratory, Bureau of Chemistry, U. S. Dept. of Agriculture, Washington, D. C.

1. Dickson, E. C.: Botulism, an Experimental Study: A Preliminary Report, J. A. M. A. **65**: 492 (Aug. 7) 1915; Botulism: the Danger of Poisoning from Vegetables Canned by the Cold-Pack Method, ibid. **69**: 966 (Sept. 22) 1917. Botulism, a Clinical and Experimental Study, Monographs of Rockefeller Institute for Medical Research, 1918, No. 8.

2. Nevin, Mary: A Study of Cheese Causing Three Fatal Cases of Botulism, read in abstract before Conference of Am. Pub. Health A., Sept. 8, 1915, Rochester, N. Y.

3. Dickson, E. C., and Burke, Georgana S.: Botulism: A Method of Isolating Bacillus Botulinus from Infected Materials, J. A. M. A. **71**: 518 (Aug. 17) 1918.

4. Burke, Georgana S.: Effect of Heat on the Spores of Bacillus Botulinus, J. A. M. A. **72**: 88-92 (Jan. 11) 1919.

5. Buckley, J. S., and Shippen, L. P.: Preliminary Report on the Relation of Anaerobic Organisms to Forage Poisoning, J. Am. Vet. Med. A. **50**: 809-816 (1917).

6. Shippen, L. P.: Toxin Formation by a Variety of B. Botulinus when Cultivated Aerobically under Various Conditions, Arch. Int. Med. **23**: 346-361 (March) 1919.

7. Graham, R.; Brueckner, A. L., and Pontius, R. L.: Studies in Forage Poisoning, VI, Bull. 208, Kentucky Agric. Exper. Station.

8. Graham, R., and Brueckner, A. L.: Studies in Forage Poisoning: The Relation of B. Botulinus to Forage Poisoning or Cerebrospinal Meningitis in Horses, J. Bacteriol. **4**: 1, 1919.

noted a sensation as though the tongue were swollen. She was not at all alarmed until 12 o'clock, when she heard that two others of the party were severely sick; then I was called.

At the first call at 12 o'clock I found considerable paralysis of the glossopharyngeal nerve. The articulation was distinct, although it was an effort for her to talk. There was no disturbance of the vision except that objects appeared to move to the left side. She could walk but veered to the left for the reason, as given by her, that the objects for which she started seemed to move over to the left and she followed the objects. There was no pain. She had a settled conviction that she would not live. There was no distress of mind about her own condition. Her only worry seemed to be that her husband, who was present at the dinner party, might be taken sick on his car, he being a Pullman porter. I immediately placed her on drop doses of gelsemium. For about an hour there seemed to be some improvement.

At 3:30 p. m. the paralysis had progressed to such an extent that there was drooping of the eyelids and a feeling of slight numbness with tension of the right arm. All the muscles were involved, showing complete involvement of the right brachial plexus. Speech was much more labored, articulation distinctly thickened. Swallowing had become difficult, the gait had become distinctly swaying in character. The mind was clear; there was no distress mentally or physically.

At 5 o'clock the hypoglossal nerve had become affected; swallowing of liquids or solids was impossible. There was a continual flexing of the right hand and beating of the arm on the arm of the rocker in which she was sitting to relieve the feeling of deadness, as she described it, in the arm. The speech was very much thickened and required great effort, although she could deliver a full sentence at a time.

At 8 p. m. there was complete paralysis of the tongue. The paralysis of the muscles of the throat and face had progressed to such an extent that she could only whisper a word at a time. At this time there seemed to be a beginning of paralysis of the pneumogastric nerve. Breathing began to be labored, heart action was slow, being at this time about 50. The eyes could only be partly opened and that only by an effort of throwing back the head.

At 10 o'clock she ceased all efforts at speaking; the respirations were slow and labored, twelve per minute. The pulse was 40. From this point all respirations became slower with a sort of gasping sigh until 1:30 a. m., when death took place (Jan. 9, 1919).

There was no pain at any time, and the paralysis of the muscles of respiration did not give any distress in breathing, although it was labored. The patient's mind was clear at all times until she lapsed into unconsciousness, about 10 o'clock.

PREPARATION AND CONDITION OF THE ASPARAGUS

The following information as to the preparation of the asparagus was obtained from the daughter of the dead woman who had canned it. This daughter was not present at the fatal meal. The asparagus was washed thoroughly, cut into lengths, and allowed to stand overnight before processing. Most of the jars examined by Mr. McCall and others showed evidence of poor sealing; some were actively leaking. All of the lids had been previously used and the rubbers were of an unsatisfactory grade.

Examination of the three jars of asparagus and the cap submitted to this laboratory showed the contents of two of the jars slightly turbid, with the asparagus tips partially broken but without changes definitely attributable to spoilage. The cap of the third jar was badly swollen, showing that there had been considerable pressure, but there was no spurting of the liquid on opening. The contents were dark-green, much disintegrated and had a most offensive odor like that of butyric acid, which should have warned the consumer that the material was spoiled. Dried material which had leaked about the seal made the odor evident before the lid was removed. This odor would be commonly regarded as putrefactive. The small sample of salad had this odor along with others of decomposition. The separate cap from one of the jars whose contents made part of the salad gave this odor to a very offensive degree.

Even the casual examiner of this material could not have failed to detect its spoiled condition. The information obtained shows that one of the persons who made the salad remarked on its peculiar taste. Yet the asparagus was used and eaten, contrary to the opinion of Weinzirl[9] that food which is offensive or putrid is automatically discarded as unfit for human consumption.

The danger of even tasting a suspected foodstuff is clearly pointed out by Dickson's report[10] of the death of a woman after tasting 2 teaspoonfuls of canned corn as taken from the jar.

ORGANISMS ISOLATED

Microscopic examination of the salad, asparagus juice and washings from the extra cap in sterile water revealed among other organisms a large terminal-spored bacillus measuring from 0.6 to 0.9 micron by 2 to 6 microns resembling *Bacillus botulinus*. This organism has proved to be a strain of *B. botulinus*, and will be designated for convenience the "Boise strain." It was isolated from the foregoing materials in pure culture by inoculating small quantities (1 loop to 1 c.c.) of heated (80 C. for ten minutes) and unheated material into sheep's brain medium made as described by Burke.[4] Growth with the characteristic butyric acid odor was obtained after twenty-four hours' incubation at from 24 to 26 C. under anaerobic conditions. Shake cultures were then made in a series of deep glucose agar tubes, dilutions being made with a platinum loop. After colonies developing gas appeared, the tubes were filed about an inch below selected colonies, the agar cylinder was pushed free from the broken edge, the surface seared with a platinum needle, and the colonies were fished and transferred to sheep's brain broth and a special glucose beef infusion[11] broth, reaction 0.5 alkaline to phenolphthalein. There was some difficulty in adjusting the reaction exactly to 0.5 alkaline, owing to changes in the sugar during sterilization. After sterilization it was often found to be as highly acid as 1.5. To overcome this, sterile alkali was added aseptically after sterilization in the autoclave.

The bacilli as cultivated in the brain medium are large, from 0.5 to 0.6 micron by 2 to 6 microns, the average length being 3 microns. They have slightly rounded ends and occur singly or in pairs end to end. In glucose beef infusion there is a tendency to form short chains. Terminal spores are formed readily (within forty-eight hours) in the brain medium, but are delayed in the glucose beef infusion to about the third week. Good sporulation takes place in plain milk, but is somewhat delayed. The spores are wider than the vegetative cell, thus bulging it slightly, giving the characteristic club shape to the bacilli. Free spores are somewhat oval and measure from 0.9 to 1 micron by 1 to 1.3 microns.

9. Weinzirl, John: The Bacteriology of Canned Goods, J. M. Res. **39**: 349-413, 1919.
10. Dickson, E. C.: Monograph 8, Rockefeller Institute for Medical Research, 1918, p. 24.
11. Van Ermengem, E.: Der Bacillus botulinus und der Botulismus, Kolle, W., and von Wassermann, A.: Handbuch der pathogenen Mikroorganismen, Jena, Ed. 2, **4**: 1909, 1912.

The bacilli are actively motile, having from four to eight peritrichic flagella[12] which were easily stained by the use of van Ermengem's[13] method. This stain also revealed the presence of a capsule, a fact not mentioned in the literature. The bacilli stain readily and evenly by the usual stains and are gram-positive. The organism is a strict anaerobe, but will grow in mixed culture with aerobic organisms, such as the white Sarcina (van Ermengem[11]) with yeast (Shippen[6]) and in our own experiments with *B. coli*.

Surface colonies on glucose agar in an atmosphere of hydrogen are small, being from 3 to 5 mm. in diameter, round to ameboid with nucleated center, whitish, slightly raised and glistening. Under low power the center is less finely granular than the remainder of the colony. Deep colonies are round to lenticular. The plates are often overspread with a fine cloudlike growth with an arborescent edge. Colonies develop slowly in from six to seven days at 25 C.; but at 37 C. there is good formation within three days. The organism grows best and produces its toxin at 37 C. contrary to the findings of van Ermengem with respect to his strain, but in harmony with other workers in this laboratory with cultures of the Nevin strain.

CHARACTERISTICS OF THE ORGANISM

The cultural characteristics in ordinary differential mediums are as follows: In plain and wort-agar-shake cultures there is very slight growth, but there is vigorous growth with gas formation in glucose agar; slight turbidity, afterward clearing up in plain standard broth and wort broth, with gas formation in the latter; glucose, lactose and sucrose broth are fermented, but with gas formation only in glucose; no reduction of nitrates; production of indol in tryptophan broth; no visible growth on potato; and gelatin is readily liquefied. The reactions in plain and litmus milk are interesting in view of those obtained by van Ermengem. He reports no change in milk. In our experiments there was a fine coagulum, peptonization beginning at about the fifth day and being completed at the thirteenth. Litmus milk showed a slight reddening, afterward decolorization and peptonization. There was no visible growth in either Uschinsky's or Raulin's solutions. The bacilli were grown in a 1 per cent. sugar yeast water medium for fermentation tests. The sugars were tested for acidity by adding a few drops of sterile litmus solution to each tube. There was slight acidity, but no gas in xylose, galactose, mannite, maltose, inulin, trehalose, rhamnose and glycerin. There was no gas and no acidity in dulcite.

The bacilli grow best in a medium that is slightly alkaline (0.5 alkaline has been the reaction of the mediums in our experiments), although it did grow and produce toxin in brain medium with a reaction of +2 to phenolphthalein and in plain glucose broth with an acidity of 2.0. Shippen[6] reported growth and toxin production in a sugar-free medium with an acidity of 3, and according to Dickson[1] a reaction of + 3.2 does not entirely inhibit production. The sheep's brain broth and a cooked meat medium[14] used in our experiment have usually been covered with a layer of neutral oil. However, the oil is not necessary, as good growth and toxin production was obtained without it by deep inoculation into the mass of finely divided animal tissue. Ordinary development also takes place in the closed arm of a fermentation tube without the oil stratum.

More than 200 laboratory animals have been used in testing the toxicity of this strain. Unfiltered and filtered broth cultures were fed (put directly into the throat by syringe) or injected subcutaneously, intraveneously or intraperitoneally into guinea-pigs, rabbits, white mice and rats. The majority of animals used, however, were guinea-pigs. In most of the experiments the minimum lethal dose of the toxin used for a 350 to 400 gm. guinea-pig was 0.001 c.c. of a filtered glucose beef infusion culture incubated six days at 37 C. The minimum lethal dose was determined by intraperitoneal injections of the guinea-pigs. The virulence of the toxin produced varies somewhat with the same medium. One culture incubated at room temperature (26 to 28 C.) for one month produced a toxin whose minimum lethal dose was 0.005 c.c. Another culture incubated at room temperature (35 C.) for twenty-eight days produced a toxin with a minimum lethal dose of 0.0001 c.c. This was the most powerful toxin obtained.

The experimental animals were watched carefully for symptoms, and postmortem examinations were made. Control animals were also carefully watched. The onset of the symptoms of poisoning began as early as from six to eight hours after injection in cases in which the dosage was excessive. With minute doses, symptoms appeared much later, in some cases from eighteen to twenty-four hours after injection and even as late as thirty-six hours afterward. They were briefly as follows: a general weakness followed by partial paralysis of either or both posterior and anterior extremities, dilatation of the pupils, dyspnea, laryngopharyngeal paralysis with loss of voice, inability to swallow, ptyalism and nervousness. Before death ensues, the animal lies flat on the abdomen with the head resting on the floor of the cage and all four extremities outstretched.

Necropsies disclosed few definite lesions. There was a general hyperemia of the internal organs as well as of the brain and meninges. In some cases hemorrhages have been noted in the lungs and in the abdominal cavity. In two cattle there were cardiac and intestinal hemorrhages. The formation of gas takes place after death very quickly in the stomachs of the animals. In several instances the stomach was ruptured.

Histologic sections by one of us (Giltner) from the lungs, liver, kidneys, spleen, brain and meninges showed evidence of thrombi in the blood vessels suggestive of Dickson's findings. In some of the vessels there were accumulations of leukocytes with an occasional fully formed hyaline thrombus. There was usually degeneration of the parenchymatous tissue in the liver and kidneys.

DETECTION AND ELIMINATION OF DANGER FROM FOODSTUFFS

From the experimental data accumulated in this study the following examples were chosen as having a more or less direct bearing on the detection and elimination of danger from foodstuffs:

The thermal death point of the organism was tested. Cultures of the Boise strain in the brain medium and

12. Demonstrated with the aid of Miss Mary B. Bryan of B. P. I., U. S. Department of Agriculture.
13. Van Ermengem, E., in Kolle and Wassermann: Handbuch der pathogenen Mikroorganismen **15**: 919, 1894.
14. Described by Holman, W. L.: J. Bacteriol. **4**: 151, 1919.

glucose beef infusion showing an abundance of free spores were heated without pressure for varying periods of time at temperatures varying from 80 to 100 C. The organism survived heating to 100 C. for one hour, but failed to grow in subcultures from tubes heated for two hours. In a series of tubes under pressure, growth occurred in fifty per cent. of the tubes autoclaved at 10 pounds pressure for fifteen minutes, but no growth has been observed after using 15 pounds pressure for fifteen minutes. While there was no growth after thirty-six days in those tubes submitted to 15 pounds pressure for fifteen minutes, apparently proving the death of all spores, they are still under observation. Mrs. Burke[3] reports the retarded germination of spores heated at high temperature. She found that spores in the brain medium survived at 15 pounds pressure for ten minutes, the growth in subcultures being determined only after the fifty-third day. Our results show that the organism is sufficiently resistant to account for its survival in canned food.

A relative idea of the stability of the toxin produced by the Boise strain was determined by the application of heat as well as light. The filtrate of glucose beef infusion cultures (a diatomaceous filter of standard type was used to separate the bacterial cells from the culture medium) was heated in the water-bath to the following temperatures and held for the lengths of time described in Table 1 and guinea-pigs were injected to determine the virulence.

TABLE 1.—EFFECT OF HEAT ON TOXIN

Temp. C.	Time of Holding Minutes	Dose (Minimum Lethal Dose 0.001 c.c.) C.c.	Occurrence of Death in Animals
62	30	1.0	Within 22 hours.
64	45	0.75	Within 21 hours.
65	30	1.0	Within 8 days.
66.5	30	0.5	Within 21 hours.
68	30	0.45	Within 11 days.
70	0	0.4	Within 5 days.
70	30	0.75	1 of 4 guinea-pigs died within four days; other survived.
73	0	1.6	Within 25 hours.
73	10	1.6	Survived.
75	0	1.0	Survived.
75	5	1.0	Survived.
75	10	1.0	Survived.
80	0	1.0	Survived.
80	5	1.0	Survived.
Control untreated		1.0	Death in 18 hours.

From these results it is apparent that the toxin was attenuated somewhat by subjection to 68 C. for thirty minutes, as the guinea-pig lived over a period of eleven days. The toxin is destroyed at some point between 70 and 73 C. by heating for ten minutes. When the temperature reached 75 C., no appreciable period of heating was required to destroy it.

Cotton-plugged tubes of toxin were exposed to direct sunlight on a fire escape and to diffuse light in front of a window with a southern exposure for the time described in Table 2. Guinea-pigs were then injected to determine the virulence.

It is evident from these results that the toxin is highly resistant to the action of light since exposure to diffuse light for two months and to direct sunlight for two, three, four and twenty-four hours respectively, failed to diminish its virulence. Exposure to the direct rays of the sun for forty hours, however, destroyed the toxin.

In order to gain an idea of the concentration limits of sugar and salt on the growth and toxin production of this strain, a series of tubes of cooked meat medium with varying percentages of glucose and sodium chlorid, respectively, were inoculated and incubated at 37 C. for one week. Those cultures showing growth in the highest percentage were injected into guinea-pigs to determine toxicity. There was growth and toxin production (guinea-pigs died within twenty hours) in 35 per cent. glucose but not in 45 per cent. and in 5 per cent. sodium chlorid but not in 8 per cent. Control guinea-pigs fed the 35 per cent. glucose and 5 per cent. sodium chlorid solutions, respectively, showed no symptoms. These results, though preliminary, indicate the alarmingly wide range of growth for this strain of *B. botulinus*.

TABLE 2.—EFFECT OF DIRECT AND INDIRECT LIGHT ON TOXIN

Kind of Light	Time	Dose (Minimum Lethal Dose 0.005 C.c.) C.c.	Results
Diffuse	1 month	1	Death in about 28-29 hrs.
	2 months	1	Death in about 42 hours.
Direct sunlight	2 hours	1	Death in about 16 hours.
	3 hours	1	Death in about 16 hours.
	4 hours	1	Death in about 16 hours.
	24 hours	1	Death in about 36 hours.
	40 hours	1	Survived.
Control, same toxin, kept in sealed bottle in ice box.		1	Death in about 16 hours.

FOOD SPOILAGE UNDER ICE BOX CONDITIONS

Canned corn, peas, deviled ham, and tongue, canned Swiss cheese and sausage were inoculated in the center of the mass with the Boise strain and placed on a tray covered only with cheesecloth in an ice box at an average temperature of 12 C. Controls were kept at the same temperature. These foods were observed daily for physical signs of spoilage. After twenty-four hours the cheese smelled "off," but the odor was not typical of botulinus. After four days the peas had a peculiar odor, but, as in the case of the cheese, it was not typical of *B. botulinus*. After a week, both the control and inoculated foods showed mold. Small portions of these foods were taken from the extreme edge of the can and emulsified in physiologic sodium chlorid solution, heated at 80 C. for fifteen minutes and then transferred to glucose beef infusion to determine growth. The organism was recovered only from the Swiss cheese and the peas, the two foods that showed some signs of putrefaction.

This preliminary experiment shows that the organism can live and multiply in as low a temperature as 12 C., therefore foods set away in the ice box are not free from danger if *B. botulinus* happens to be present.

EFFECT OF THE SPORES OF THE BOISE STRAIN IN THE ANIMAL BODY

Cultures in glucose beef infusion showing free spores were freed from their toxin by heating at 80 C. for ten minutes. Animals inoculated or fed these cultures showed no symptoms. In another experiment the cells were freed from their toxin by washing in physiologic sodium chlorid solution. They were centrifuged twenty minutes at high speed seven different times. The supernatant liquid was pipetted off, fresh sodium chlorid solution was added and the cells were thoroughly separated after each centrifuging. The cells were allowed to stand twice in sodium chlorid

solution for one hour intervals and after the last centrifuging were placed in the ice box over night. Two guinea-pigs and a rabbit when injected with these washed organisms died within seventy-two and ninety-six hours, respectively. Part of these same cells were then rewashed seven times (making fourteen in all) and inoculated immediately into guinea-pigs. These animals survived.

In another experiment cultures were washed seven times as before. Animals fed these washed organisms died within twenty-four hours. From these results it is apparent that cells may be successfully freed from their toxin by heating at 80 C. and by washing, but that washing the cells free is a very difficult matter.

The organism was recovered several times from the feces of the animals fed spores either freed from toxin by heat or by washing, and from the liver and spleen of animals injected with cultures. Colonization of the bacilli in the body has not been proved thus far, but the foregoing isolations from feces prove that the organism goes through the guinea-pig's body in twenty-four to forty-eight hours with undiminished virulence.

A few preliminary experiments on the agglutination and complement fixation reactions of the Boise and Nevin strains have been made, but thus far the results have been unsatisfactory. At this time a sheep and a horse are being immunized against the toxin of the Boise strain, for future experiments.

In testing the toxicity of this strain for larger animals, two dogs, four adult cattle, one hog and four chickens were used. Dog 355, weighing about 5 kg., was injected subcutaneously with 5 c.c. of toxin (minimum lethal dose 0.001 c.c.) and Dog 363, weighing about 20 kg., was fed 13 c.c. of the same toxin. The injected dog showed typical symptoms within forty-eight hours and died within four days. The fed dog survived. A month afterward the same dog (363) was given more toxin by mouth, the dose being 20 c.c. (minimum lethal dose 0.0001 c.c.). The dog survived, indicating a strong resistance to toxin taken by mouth.

Of the four cattle, two were injected and two were fed with toxin. Cow 422 was injected subcutaneously with 10 c.c. of toxin (minimum lethal dose 0.005 c.c.); Cow 344 was given 35 c.c. by mouth, and Cow 431, 40 c.c. by mouth of the same toxin. After nine days the cattle had showed no effects from the toxin. Cow 422 was then injected subcutaneously with 20 c.c. more of toxin (minimum lethal dose 0.0001 c.c.); Cow 344 and Cow 426 (no previous treatment had been given No. 426) received 20 c.c. of toxin subcutaneously. All of these cows succumbed, showing typical symptoms and postmortem findings. Cow 422 died in fifty-two hours, Cow 344 in seventy-three hours and Cow 426 in seventy-four hours. The only cow that survived was Cow 431, which was fed the toxin and received no injection.

A six months old hog (3245) was fed 30 c.c. of toxin (minimum lethal dose 0.005 c.c.). No symptoms were observed. Three weeks later the same animal was injected with 5 c.c. of toxin (minimum lethal dose 0.0001 c.c.) subcutaneously. Three days later the only symptom noted was a very slight incoordination of the hind parts; the animal otherwise appeared normal. One week after the treatment the hog succumbed with botulism. These results with the dogs, cattle and hog seem to indicate that they are resistant to the toxin when it is taken by mouth, but are not resistant when it is injected.

The four chickens were fed with varying amounts of toxin (minimum lethal dose 0.0001 c.c.). The first received 4 c.c., the second 1 c.c., the third 0.5 c.c., and the fourth 0.1 c.c. Those receiving 4 and 1 c.c. of toxin, respectively, died, the first in eighteen hours, the second in forty-six hours. The other two survived, showing no symptoms. These results indicate that the Boise strain when fed in large amounts is toxic for chickens.

COMMENT

Considered in its relation to poisoning from canned food, the results of this study are in the main consistent with the findings of Dickson[1] and Dickson and Burke,[3] but differ in marked respects from those of van Ermengem[11] and others who studied the organisms isolated from sausage in Europe. The Boise strain differs also from the Nevin organism as studied by Nevin,[2] Buckley and Shippen,[5] by DeBord of this laboratory, and from the findings of Graham and his co-workers[15] in the experiment stations of Kentucky and Illinois. The van Ermengem and Nevin organisms are easily killed, even in the spore form, by boiling. Such bacteria cannot be a factor in the spoilage of canned goods processed by any of the well-known methods. The Boise organisms, however, and certain of the organisms of Dickson may clearly be expected to survive occasionally in canned food processed by any of these methods. The discordant results obtained in our autoclave experiments have not been fully analyzed. The rate of penetration of heat into different mediums, the effects of varying hydrogen-ion concentration and the protective effect assumed to be due to some substances must all be considered in a complete analysis of the results. These factors are already being studied in at least two laboratories,[16] but the fact remains that the Boise organism, like the organism of Dickson and Burke, will at least occasionally survive any method of processing in which heavy steam pressure is not used.

Successful canning, so far as the danger from such strains as the Boise organism is involved, depends not so much on the method of work selected as on the rejection of infected material at the start. Dirty, wilted and partly rotted food carries multitudes more of organisms into the canning process than fresh, sound, clean fruits and vegetables. Dirty tables, dirty jars and lids, sewage-polluted water and flies are sources of contamination which should be eliminated. The material should be processed according to the best experience available. Finally, it must be frankly recognized that an occasional jar, or series of jars, may yet spoil because some factor escaped all these precautions. Such food should be destroyed, not salvaged, not fixed up into salads, mince meat or pie stock for human food. The toxin present may be destroyed by heating until jar, lid and rubber, as well as contents have actually reached the boiling point.

Typical spoiled cans are readily identified. Doubtful cases, however, occur frequently. A consumer unfamiliar with a particular product is frequently puzzled by its odor as it comes apparently sound from a can in good condition. Cooking, as recommended

15. Compare references 7, 8 and 17.
16. Thompson, G. E.: Temperature-Time Relations in Canned Goods During Sterilization, J. Indust. & Engin. Chem. **11**: 657, 1919.

by Dickson, appears to be the practical method of destroying possible toxin in such material; even this, however, leaves the spores viable. Feeding suspected food to domestic animals, without safeguards, is clearly undesirable. Chickens, pigs and cattle survive when fed the Nevin organism in moderate amounts. Dickson's chickens, however, and some of those used in our experiments, died. The work of Buckley and Shippen[5] and the Kentucky[17] results show that the excreta of these animals are clearly a menace to other species, since horses died when fed the hen dung from experimental coops. In our experiments the organism was recovered from hen dung forty-eight hours after feeding, and was toxic for guinea-pigs. The organism has also been recovered in full toxin-producing power from the feces of guinea-pigs fed cultures freed from toxin by heating to 80 C. for ten minutes. Such recovery was possible within twenty-four to forty-eight hours after feeding, but has not succeeded after longer periods. Fecal contamination from such sources is, therefore, possible.

B. botulinus is not the only heat-resistant anaerobe responsible for putrefactive spoilage. In the examination of many samples of spoiled canned food it has been necessary to depend on the animal experiments to identify those which were toxic. The examination of several lots of material has shown organisms closely resembling the Boise strain in morphology, heat resistance and physical evidences of spoilage, but without toxic effect when fed. In such a case of known history, for example, the spoilage of the jars of food was traced to the well water on the premises. Experimental packs in the well water exhibited typical spoilage in spite of scrupulous care in canning. A survey of the premises proved the contamination to be due to sewage from the household. In spite of its offensive odor, the experimental animals were not harmed by this material. Many such products are doubtless eaten without toxic effect.

Viable spores of an anaerobe find ideal conditions for development in a properly packed and processed can. Such a can presents conditions in which an obligate aerobe cannot develop. Hunter and Thom[18] found 224 out of 530 cans of salmon to contain living spores of a particular organism without evidence that this species had caused changes in the material after it was canned. In this particular work no strict anaerobes were isolated. Mrs. Obst[19] of this laboratory, however, found that anaerobic spore formers were abundant in the sardine canneries, and that, in spite of commercial precautions in processing, it was only necessary to incubate a few cans at 37 C. to obtain one or more "swells."

Careful examination of cultures of experimental packs, together with the known observations of persons connected with the Boise cases and the Newark cases,[20] clearly agree that canned food infected with either strain of this series is definitely spoiled food. It usually shows gas, marked disorganization, and an odor that is offensive and would be classed by most people as putrid. No careful observer can open typical cans without detecting their condition. Dickson in studying material infected by *B. botulinus* has recorded the same observations, but has established no correlation between the physical examination of canned goods and the safety of the consumer. On the contrary, he has issued a general warning against all home-canned food.

Our observations are in harmony with the conclusions of Rosenau,[21] who says: "All the cans examined by Professor Weinzirl and Dr. Cheyney have been eaten by the scientific workers at the experimental lunch club, and careful note of any effects has been made. Not the slightest symptoms have been produced. These favorable results were clearly predicated, for the kinds of bacteria and molds in merchantable goods are of the harmless sort." From this quotation it is clear that the Harvard investigators have selected canned food sound from physical examination and found it safe. It is equally clear that they did not consume food from cans that showed physical signs of spoilage. The application of their conclusions is strictly limited by the assumption put forward by one of them (Weinzirl[9]) that obviously spoiled or putrescent food will not be eaten. This premise has proved unsound in the two cases we have cited, because the food was offensive; it was eaten, and the consumers died. Unfortunately, there are many people who do undertake to salvage canned food which they know to be spoiled or in some stage of decomposition. The warning, therefore, is clearly not to avoid canned food, but to avoid spoiled food canned or uncanned, but especially if canned.

SUMMARY

1. The Boise poisoning case was due to canned asparagus spoiled by a strain of *B. botulinus* (Boise strain) whose spores survive 10 pounds pressure for fifteen minutes or 100 C. for one hour.

2. This strain has an optimum growth temperature of 37 C., high heat resistance, and hence approaches the characteristics given by Dickson for his No. III, but differs markedly from the organism of van Ermengem and the Nevin organism as studied by Shippen.

3. The toxin produced by the Boise organism is destroyed by heating to 75 C., or by heating for ten minutes at 73 C. The toxin varies in strength with changes in cultural condition. At the highest toxicity obtained, the minimum lethal dose for a guinea-pig weighing from 350 to 400 gm. was 0.0001 c.c. of a filtered glucose beef infusion culture incubated twenty-eight days at 35 C. and injected intraperitoneally.

4. Bacilli freed from toxin by washing or spores freed from toxin by heat do not produce symptoms of poisoning when fed or injected, but have been recovered in virulent form from feces of fed animals.

5. All cultures of the Boise organism have a characteristic and offensive odor which was clearly evident in the canned material connected with this case. This has been referred to as butyric but, certainly, in many foodstuffs would be inseparable from the putrefactive group of odors.

6. Decomposition occurring in a can or jar properly packed, exhausted and sealed is necessarily anaerobic. When physical evidence of such decomposition is present, the material should be destroyed, not eaten.

17. Graham, R., and Himmelberger, L. R.: Studies in Forage Poisoning, Report U. S. Live Stock Sanit. As. **19**: 22-42, 1915; Studies in Forage Poisoning, J. Comp. Path. and Therap. **29**: 107-116, 1916; Studies in Forage Poisoning, J. Infect. Dis. **19**: 385-394 (Sept.) 1916.

18. Hunter, A. C., and Thom, Charles: J. Indust. & Engin. Chem. **11**: 655, 1919.

19. Obst, M. M.: A Bacteriologic Study of Sardines, J. Infect. Dis. **24**: 158 (Feb.) 1919.

20. Unpublished notes of G. G. DeBord in the Microbiological Laboratory.

21. Rosenau, M. J.: No Ptomain Poisoning—Canned Foods are Safest, the Canner **48**: 52, 1919.

Clinical Notes, Suggestions, and New Instruments

THE WALCHER POSTURE VERSUS CESAREAN SECTION

H. F. BIGGAR, M.D., CLEVELAND

Is it not surprising how many cesarean sections are being performed by the younger class of obstetric surgeons? An obstetric surgeon reports that, though he has not been in practice more than ten years, he has already passed his one hundred and fiftieth cesarean section. It may be questioned whether the conditions warrant the operation. Has not nature perfected the proper way for normal birth?

Cesarean section is justifiable only when the following conditions are present; contracted, deformed or diseased pelvis; placenta praevia; eclampsia; fibroid tumor; kyphosis; osteosarcoma of the pelvis; hypertrophic elongated cervix; uterine fibroma; malignant disease of the cervix uteri; face presentation with chin directly posterior; funnel pelvis; inoperable carcinoma of the uterus; presentation of the head, cord and foot; atresia of the vagina; deformities of fetus of abnormal development, including the hydrocephalic fetus; ruptured uterus; hydramnios; suppurating ovarian cyst; double uterus; adherent placenta and ruptured uterus; Bright's disease; difficult labor after ventral fixation of the uterus; scar of old operations for other conditions; vaginal occlusion; dyspnea; cyanosis; anasarca and albuminuria; dermoid cyst of the pelvis; malignant ovarian tumor: labor with impaction; rigid os; pendulous abdomen; malignant disease of the rectum, and anteversion of the gravid uterus.

Why not try the Walcher posture before using the knife? I have found this posture sufficient in quite a number of patients, even though cesarean section was advised by reputable surgeons, and the patients were willing to submit to the operation.

THE WALCHER POSTURE

The patient is placed in the decubitus position on a table with one end so elevated that the nates project well over the edge, the legs hanging perpendicularly, the feet not touching the floor. When the head presents in the soft parts the end of the table is lowered so that the top is level. The patient is then put in the extreme lithotomy position and delivered with or without instruments. This position increases the diameter of the superior strait of the pelvis one-quarter inch or more.

TYPHOID FEVER TRANSMITTED THROUGH THE BREAST MILK OF THE MOTHER

REPORT OF A CASE IN AN INFANT OF EIGHT MONTHS*

HENRY HEIMAN, M.D., NEW YORK

March 19, 1919, there was admitted to the adult medical service, at Mount Sinai Hospital, a nursing mother suffering from typhoid fever. Two days later the patient's baby was brought to the pediatric service, afflicted with the same malady. A bacteriologic study of the mother's breast milk disclosed the presence of typhoid bacilli.

HISTORY OF THE MOTHER'S CASE

The patient was a married woman, aged 29, whose family history and past history were quite negative except for an attack of influenza six weeks previously. Two weeks before admission to the hospital she suffered an onset of pain in the lower back region, headache, fever and chills. There was no epistaxis. Diarrhea had been present for several days. The patient was found acutely ill, restless and actively delirious. The lower pole of the spleen was felt 3 inches below the costal margin. Definite rose spots were present. The pulse was dicrotic. The temperature while the patient was in the ward showed a typhoid curve, gradually falling in the fifth week of the disease from 105 F. to normal. The blood showed a leukopenia, the white count being 4,200 with 68 per cent. polymorphonuclears and 32 per cent. lymphocytes. The blood culture showed the presence of typhoid bacilli, and the Widal reaction was positive. A culture of the breast milk revealed the presence of actively motile bacilli corresponding in every respect to the typhoid organism.

HISTORY OF THE INFANT'S CASE

The patient was an infant, aged 8 months, whose birth history was perfectly normal. It had been breast fed until two weeks before admission to the hospital, having been weaned because of the mother's illness. There had been no previous illness or physical defect. Four weeks before the admission to the hospital there had been an onset with a rise in temperature to 101 F., but the infant seemed as well as usual. In ten days it had apparently recovered entirely. Then there followed a sudden rise of temperature to 105. Both ear drums were incised, but the fever continued. There was no vomiting or diarrhea. There were no convulsions. The baby appeared acutely ill, with rapid respirations, and flushed cheeks. There were no rose spots. The spleen was enlarged, the lower pole being felt 1 inch below the costal margin. The rest of the physical findings were negative. The blood count was 8,000 white cells, with 74 per cent. polymorphonuclears and 26 per cent. lymphocytes. The blood culture showed the presence of typhoid bacilli, and the Widal reaction was positive.

COMMENT

We have found the experience worthy of report because of its very unusual occurrence. We have been unable to find any similar record in the literature. In one case however, reported by Lawrence,[1] typhoid bacilli were found in the breast milk in a nursing mother of 23, ill with the disease. But in this instance the infant escaped infection.

64 West Eighty-Fifth Street.

* Read before the thirty-first annual meeting of the American Pediatric Society, Atlantic City, N. J., June 18, 1919.

Idiosyncrasy to Quinin.—About six years ago I drove 6 miles into the country to see Miss O. B., aged 14, who had clinical symptoms of malaria. I left for her quinin sulphate in 3 grain capsules. Within two hours a messenger came for me, and I found her with hands, face and feet swollen, rapid, difficult breathing, and a sense of suffocation and weakness. These symptoms were followed by burning and itching all over, especially within the nose and ears. The symptoms gradually disappeared. The patient had taken 3 grains of quinin. One year later the patient took one of the much advertised L. B. Q. tablets for a cold. Within an hour or two she fainted, falling on the floor, and otherwise had symptoms as in the former case. Three years ago a Mobile physician prescribed I., Q. & S. Elixir. Suspecting quinin, she took only 15 drops. Within two hours she was suffering as before. Two years ago she filled some capsules with quinin for her father. She did not taste it, but unconsciously rubbed her lip. The lip swelled as thick as a negro's, and she had slight constitutional symptoms. Two years ago she married and preceding a recent confinement she had several attacks of fever lasting several days each time and resembling malaria. After a number of trials we found the tertian parasite, but gave her no quinin. Following confinement about ten days, I gave her a tonic, containing one-sixteenth grain of quinin to the dose. The first dose produced all the symptoms detailed in the first instance. The patient is a large woman, weighing 200 pounds. As a small child her mother often gave her quinin without any ill effect.—M. A. FORT, M.D., Grand Bay, Ala.

1. Lawrence, C. H.: Boston M. and S. J. **151**: 153 (July 29) 1909.

Warning Against Fly Paper.—An exchange mentions that the Public Health Service in Germany has issued a warning against brands of fly paper which contain considerable arsenic and might prove fatal if it fell into the hands of young children. It is advised to use fly paper that has been made with quassia as this would deter children from touching it, while the content of arsenic is less.

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SATURDAY, SEPTEMBER 20, 1919

SPOILED CANNED FOOD

The necessity for preserving perishable foods from the season when they are produced in overabundance to the months when they are scarce is so evident in these days as to require no justification. In all civilized countries, commercial processes of preservation by heat and by cold have become highly developed and are extensively used. During the past few years, household methods of canning and preserving have been especially urged on economic grounds and have been widely put in practice. As one result it has become a familiar experience in many households that some of the domestically canned foods undergo spoiling after the lapse of a few weeks or months. The commercial canners of food on a large scale have similar experiences and sometimes have cans that are "swelled" or "sour" thrown back on their hands. The question has often been raised as to the dangers to health involved in the spoiling of heat-preserved foods, and now the answer to this question seems to be slowly shaping itself.

When canned goods spoil it is pretty evident that either the heating has not been sufficient to destroy the germs originally present or that the container has leaked and allowed germs to enter with the air. In the latter case decomposition may be caused by yeasts, molds, or the ordinary bacteria of dust; in the former the surviving germs are practically certain to belong to the class of spore-formers. The heat-resistant spore-formers may in turn be divided into two groups, the aerobes and the anaerobes. The spore-forming aerobes found in insufficiently processed canned foods seem to belong largely to the *B. subtilis* or *B. mesentericus* groups, and as yet no injurious effect seems to have been laid at their door. This was perhaps to be anticipated, since organisms of these groups have rarely evinced pathogenic properties and since these aerobic organisms, even if they survive the heating, are not able to develop in hermetically sealed cans.

On the other hand, the spore-forming anaerobes constitute a group, many members of which are highly pathogenic for man and the domestic animals, and some of which, notably *B. botulinus*, have been definitely implicated in cases of food poisoning. It has become increasingly evident that one of the main dangers from botulism in this country is the use of food that has been insufficiently heated in the attempt to preserve it. This has been clearly brought out in Dickson's monograph on botulism,[1] and is further illustrated by an important article in this issue of The Journal.[2] The latter investigators lay stress on the fact that in the case reported by them the food was patently spoiled when eaten, and make the somewhat sweeping statement—in the body of the article—that there are "many people who do undertake to salvage canned food which they know to be spoiled or in some stage of decomposition."

The recent studies on botulism appear to establish the interesting fact that there is a wide range of heat resistance among the various strains of *B. botulinus*, and that the organism originally discovered by Van Ermengem and described under this name did not have the same biologic qualities as those manifested by several of the strains of *B. botulinus* isolated in this country. The organism described by Van Ermengem did not grow at 37 C. and had a low heat resistance. The Boise strain isolated by Thom and his associates[2] has an optimum growth temperature of 37 C., and its spores survive steaming under 10 pounds pressure for fifteen minutes or a temperature of 100 C. for one hour. It is evident that the conditions under which home canning is generally carried out will not always insure the death of these heat-resisting strains of *B. botulinus*.

Thom and his associates are inclined to attach considerable importance to the putrefactive odors emitted by the strain of *B. botulinus* with which they have worked. Earlier writers have described the odor of *B. botulinus* cultures as sharp or butyric, but it is evident that some, at least, of the foods in which this organism has grown (in pure culture) are offensively putrefactive. The practical deduction that is drawn is that canned food presenting physical evidence of decomposition should not be eaten. This seems reasonable enough, and it is a rule that is probably followed instinctively in the majority of cases, although there will doubtless be occasional exceptions.

At the present time, it is plain that botulism is disturbingly frequent in the United States (apparently no case has ever occurred in Great Britain), that foodstuffs canned in the household are especially implicated in the causation of botulism, and that canned foods contaminated with *B. botulinus* usually, perhaps always, manifest physical signs of spoiling. Spoiled canned food has long been recognized as potentially dangerous; we can now estimate certain sources of danger much more precisely.

1. Dickson: Monograph 8, Rockefeller Inst. for Med. Research, 1918.

2. Thom, Charles; Edmonson, Ruth B., and Giltner, L. T.: Botulism from Canned Asparagus, this issue, p. 907.

DO AMERICANS NEED MORE CALCIUM?

Professor Sherman of Columbia University, who has devoted much attention to the inorganic metabolism of man, has come to the conclusion that "the ordinary mixed diet of Americans and Europeans, at least among dwellers in cities and towns, is probably more often deficient in calcium than in any other chemical element."[1] This statement is rendered additionally significant by the fact that calcium constitutes about 2 per cent. of the body weight, a proportion larger than that of any other of the inorganic elements found in the organism. In the case of the growing individual, lime must be provided for the normal development of the bones, which include 99 per cent. of this element. The pregnant mother needs calcium for the rapid increment of the fetus; and during lactation she has a similar requirement for the production of a secretion, milk, which is exceptionally rich in it. The tendency toward a shortage of calcium is not confined to the human species. Forbes,[2] of the Ohio Experiment Station, has summarized the available information to show that liberal milk production in cattle involves a certain degree of impoverishment of the skeleton in mineral substance; that rations which contain no leguminous roughage are apt to be definitely lacking in mineral nutriment, especially calcium; that the response of heavily producing cows to liberal intake of mineral nutriment is remarkable for its efficiency, it being apparently impossible by any method of feeding entirely to prevent loss of calcium, at least during the early part of the period of lactation, and that the mineral constituents of the skeleton appear to be more readily available for use in milk secretion than are nutrients directly absorbed from the ration.

The seeds, such as are represented by the numerous cereals and their milling products that enter largely into our present day diet, the roots and tubers, and the various meat products probably constitute more than three quarters of the food intake of the average adult American. All of these food materials are comparatively poor in calcium. In referring to this deficiency, McCollum, Simmonds and Parsons[3] of the School of Hygiene at Johns Hopkins University regard it as so pronounced that they are of the opinion that "even in those human dietaries in which such calcium-rich foods as milk are used in fair liberality, the intake of calcium may be still below the optimum, and that a direct addition of this element in the form of the carbonate or lactate might be of distinct benefit in human nutrition except perhaps in those regions where the water is unusually rich in calcium salts."

Oscar Loew long since suggested the addition of calcium salts to the dough from which bread is baked. During the war, several European investigators have formulated similar advice in the belief that even when the daily losses of lime are inconspicuous, long continued deficits in the human calcium balance may be a disadvantage. The average daily calcium requirement has been estimated as a little less than 0.5 gm. per man. One pint of milk will furnish this quantity; but aside from this food, the menu of American homes offers relatively few opportunities to satisfy the human need. Admitting, as we now freely may, that the calcium requirement can be satisfied directly by inorganic salts,[4] it remains to be determined whether the unfortunate poverty of American dietaries in milk should not be artificially compensated for. McCollum and his collaborators[3] remind us that since civilized man usually adds sodium chlorid to his foods to suit the taste, the shortage of sodium and chlorin in the diet of man presents no problem. They propose that an addition of calcium could be most conveniently made to our foods through the use of a mixture of equal parts of common salt and of calcium carbonate in the kitchen and on the table. This suggestion deserves a sympathetic hearing.

THE ETIOLOGY OF PANCREATITIS

The common association of inflammatory enlargement of the head of the pancreas and disease of the bile tracts appears to indicate a relationship between the two conditions. It has generally been assumed that bile tract disease is primary and that the pancreatic affection is in some way a result or complication of the primary biliary infection. The question, therefore, in the minds of most investigators of this subject has been as to the modus operandi of this relationship.

Deaver, of late years, has been the champion, in America, of the theory of the lymphatic transmission of infection from the gallbladder to the pancreas. His conception is based largely on clinical experience and may be stated as follows:

> The gallbladder, bile ducts, pyloric region of the stomach and the second part of the duodenum, through their efferent lymph channels, are placed in intimate relation to the head of the pancreas, and it is the head of the pancreas that is most frequently involved in pancreatitis associated with other upper abdominal diseases. The course of infection has time and again been observed at the operating table in gallbladder disease. Inflammation of the gallbladder is followed by enlargement of the cystic lymph glands, periductal lymphangitis, enlargement of the glands at the head and the margin of the pancreas and often of the regional lymph channels at the head of the pancreas. Induration of the head of the pancreas about the common duct is present in 35 to 40 per cent. of disease of the gallbladder. . . . The first stage of chronic pancreatitis is nearly always disease of the pancreatic lymph glands.[5]

1. Sherman, H. C.: Chemistry of Food and Nutrition, New York, The Macmillan Company, 1918, p. 262.
2. Forbes, E. B.; Halverson, J. O., and Morgan, L. E.: The Mineral Metabolism of the Milch Cow, Third Paper, Bull. 330, Ohio Agricultural Experiment Station, September, 1918, pp. 91-134.
3. McCollum, E. V.; Simmonds, N., and Parsons, H. T.: A Biological Analysis of Pellagra-Producing Diets, VI, Observations on the Faults of Certain Diets Comparable to Those Employed by Man in Pellagrous Districts, J. Biol. Chem. **38**: 113 (May) 1919.
4. Osborne, T. B., and Mendel, L. B.: The Inorganic Elements in Nutrition, J. Biol. Chem. **34**: 131 (April) 1918.
5. Deaver: Pancreatic Lymphangitis, Surg., Gynec. & Obst. **28**: 433 (May) 1919.

A second theory as to the cause of pancreatitis is based on the results of numerous experiments in which it has been shown that lesions of the pancreas in every way similar to those found in man may be produced in animals by the injection of various substances, particularly bile and the bile salts, into the pancreatic ducts.[6] The importance of these observations was emphasized by the report of a necropsy by Opie, later duplicated by others, in which a small gallstone in the common duct beyond the point of entrance of the pancreatic duct caused bile to flood the pancreas, producing the typical clinical and pathologic picture of acute pancreatic necrosis.[7] It should be remembered, however, that frequently in cases of pancreatitis there are no lesions of the bile tracts to account for the pancreatic disease. Thus, Archibald and Mullaly found neither gallstones nor cholecystitis in more than 50 per cent. of thirty-four cases of pancreatitis.[8]

There are, therefore, a number of cases in which none of our current theories of the etiology of pancreatitis are satisfactory. Archibald has recently offered experimental evidence, in the rediscovery of the sphincter of Oddi, which promises to remedy our lack of knowledge in this respect.[9] Oddi, in 1888, demonstrated the common duct sphincter and studied its physiology, showing that it could be made to contract reflexly in response to a variety of forms of irritation of surrounding viscera with sufficient force to resist the pressure of 50 mm. of mercury. Archibald has confirmed this work, which previously had escaped attention, and added the observation that bile, forced from the gallbladder under pressure which the duct sphincter can be stimulated to resist for a period of minutes, may find its way into the pancreas and there cause almost any grade of pancreatitis the experimenter wishes to produce, from the chronic fibrous type to the fulminating variety with death in a few minutes.

Normal bile is relatively innocuous. As pointed out by Flexner, the mucus of normal bile seems to reduce the irritative properties of the bile salts through its action as a colloid. Bile from which the mucus has been partially or wholly removed, or in which there has been a marked increase in the proportion of bile salts, is intensely toxic to the pancreas and capable of producing rapid, widespread necrosis of the pancreatic cells.

In the light of Archibald's contribution we now seem to know the chemical and mechanical factors necessary to explain satisfactorily the production of all grades of pancreatitis. However, we lack knowledge of the conditions under which these factors are produced. Changes in the composition of the bile may result from the presence of calculi (which themselves are usually indicative of the presence of low grade infection) and from frank infection. Changes in bile pressure may result from reflex spasm of the sphincter due to hyperacidity or the irritation of gastric or duodenal ulcers; from sudden blocking of the ducts by stone or inflammation, or even from an increase in the rate of bile secretion. The exact relationships here remain to be elucidated.

Archibald takes exception to the idea that pancreatitis ever occurs by retrograde transmission of infection through the lymphatics from the gall tracts to the pancreas. He points out that peripancreatic lymphangitis and lymphadenitis in cases of pancreatitis are probably the results of the pancreatitis rather than its precursors. While the argument seems to be sound, backed as it is by the results of very careful experimental work, it probably would be premature to discard the lymphatic theory altogether. The question deserves at least further study.

6. Flexner: The Constituent of the Bile Causing Pancreatitis and the Effect of Colloids on Its Action, J. Exper. Med. **8**: 167 (Jan.) 1906
7. Opie: The Etiology of Acute Hemorrhagic Pancreatitis, Bull. Johns Hopkins Hosp. **12**: 182 (April, May, June) 1901.
8. Archibald and Mullaly: Some Observations on the Diagnosis and Treatment of Subacute and Chronic Pancreatitis, Canadian M. A. J. **42** n. s. **3**: 87 (Feb.) 1913.
9. Archibald: Experimental Production of Pancreatitis, Surg., Gynec. & Obst. **28**: 529 (June) 1919.

THE IMMUNITY OF CITY-BRED RECRUITS

The existence of large bodies of men mobilized in various army camps where they were subject to systematized medical supervision during the past two years has furnished unique opportunities for gathering statistics on an unprecedented scale with respect to the incidence of certain forms of disease. Frequent medical inspection of thousands of men is an uncommon experience, at least on the scale which the preparation for war made possible in the United States. The conclusions afforded by the wealth of data obtainable from such sources are likely to be far more tenable than those drawn from comparatively few cases, however carefully they may be studied.

According to figures recently compiled by Love and Davenport[1] in the Section of Medical Records of the Medical Department of the U. S. Army, it appears that the prevailingly rural camps had at least 25 per cent. more cases of influenza, 10 per cent. more pneumonia, 10 per cent. more deaths and 30 per cent. higher admission rate for all sickness than the prevailingly urban camps. The army experts conclude, therefore, that in the influenza pandemic, rural troops suffered more than urban troops.

This thesis offers an interesting theme for speculation as to the possible causes of this unlike morbidity. To the person accustomed to hear sung the praises of the healthfulness of country life in America, the figures may come as a surprise. The first hypothesis to account for the recorded facts assumed that recruits coming from densely populated regions are immune from a given disease because they have already had the disease. However, Love and Davenport have pointed out that while such an explanation might apply to measles, it does not apply generally. Thus they state

1. Love, A. G., and Davenport, C. B.: Immunity of City-Bred Recruits, Arch. Int. Med. **24**: 129 (Aug.) 1919.

that cerebrospinal meningitis is scarcely so frequently encountered in early life as to warrant the assumption that the soldiers from the immune areas had acquired immunity from the disease by having had it in their youth. The hypothesis that the immunity is due to the selective elimination of the susceptibles likewise encounters fundamental contradictions.

The most probable suggestion thus far advanced assumes that recruits coming from large cities or other densely populated areas have acquired a general immunity to infectious or communicable disease. In the words of Love and Davenport, it assumes that "any one of the communicable diseases leaves the body in a state of heightened resistance to all microparasites, possibly through a condition of persistent hyperleukocytosis." We shall not enter here into the facts of epidemiology which might be cited in support of such a conviction. Even though it be true that after an epidemic year communities will be exceptionally free from epidemics for a year or two, we shall not be inclined in these days to follow the method, once not uncommon, of exposing children to the danger of certain epidemic diseases for the sake of the subsequent immunity that they might thus acquire.

Current Comment

THE DISCOVERY OF THYROXIN—AN AMERICAN RESEARCH

Persons who deal with so-called "practical" affairs, and employ the routine agencies and materials of their vocations or professions, are singularly prone to overlook the labor involved in perfecting what they utilize so effectively. In the hands of the physician, for example, a seemingly simple manometer is made to tell the story of blood pressure in a few minutes; or a complex chemical compound is prescribed with the assurance that it will accomplish a definite therapeutic purpose—in each case usually without any realization of the scientific efforts preliminary to the final success. Scientific research would receive a more respectful consideration if its necessity for present-day practice were more definitely appreciated. This prelude is the occasion for reference to some details recently published with respect to the discovery by Kendall[1] of the active iodin compound of the thyroid gland. We have already referred in THE JOURNAL to some features of thyroxin, as the compound has been designated briefly, and its potent physiologic properties. The investigation of the chemical constituents of the thyroid was begun by Kendall in 1910 at the pathologic department of St. Luke's Hospital, New York. Thyroxin was first isolated as a chemical entity in December, 1914. Since then many grams have been prepared at the Mayo Foundation laboratories in Rochester, Minn.; in fact, about 33 gm. have been separated from more than three tons of fresh thyroid material. The structural formula, indicating it to be trihydro-triiodo-oxy-*beta*-indolpropionic acid was determined in the summer of 1917. Osterberg succeeded in synthesizing thyroxin with its 60 per cent. of iodin in December, 1917; and the synthesis and formula have since been confirmed by Kendall. Minute doses, represented by a few milligrams, of thyroxin show the characteristic stimulation of metabolism in man that thyroid medication is known to bring about. Kendall believes that the active chemical groups in thyroxin are essential to the production of energy in the body.[2] American science may take pride in the successful outcome of nearly a decade of patient effort in the laboratory directed to the unraveling of the chemical mystery of the potent thyroid. It is a story of persistent trials in the face of many discouraging incidents. The history of thyroxin, in its early chapters now written where all may study it, furnishes an excellent illustration of that "diligent inquiry and laborious, persistent search of truth" which the dictionary designates as research.

1. Kendall, E. C.: Isolation of the Iodine Compound Which Occurs in the Thyroid, J. Biol. Chem. **39**: 125 (Aug.) 1919.

2. Kendall, E. C.: Endocrinology **2**: 93, 1918.

THE JOURNAL OF DENTAL RESEARCH

The *Journal of Dental Research*, which has recently begun its career as a journal of stomatology, "devoted to the advancement and dissemination of knowledge pertaining to the mouth and teeth and to their relation to the body as a whole," represents a distinctly new venture in the field of dentistry. Hitherto the publications dealing with this subject have either been accustomed to limit themselves to news and society transactions or been dominated in most cases by the influence of commercial houses. Professor Gies of Columbia University, an ardent champion of independent journalism in science, has remarked in a prefatory note:

> Dentistry has been asleep in the field of original literature, narcotized by a system of dominant trade journalism that has been notable in the history of dentistry for commercial efficiency, professional obtundity, and unlimited superficiality—a system of journalism, which, because of its general acceptance and approval by dentists, has demoralized the spirit and impoverished the imagination of dentistry; a system of journalism that has been completely eliminated from respect and influence in every other profession, because of that system's inherent insincerity, unreliability, and selfishness.

Two numbers of the new journal have already made their appearance under the editorship of a group of American investigators whose names guarantee adherence to better ideals. An innovation consists in the publication of abstracts or interpretations of the original matter in each communication so that it may be made also to appeal in "practical terms" to those less well equipped to appreciate the niceties of more highly technical research. Furthermore, the editorial office maintains a Bureau of Information on Dental Research for the assistance of dentists who may wish to avail themselves of knowledge and experience which the board of editors may have. It is hoped to support this worthy undertaking by the establishment of a suitable endowment fund. The *Journal of Dental Research* is practical evidence that a new spirit—a scientific spirit—is now permeating the dental profession in this coun-

try. Until recently, practically all dental journals were of the "house organ" class. Such journals cost the recipient little or nothing, and scientifically are worth just what they cost!

THE TEMPERATURE OF THE SKIN

The temperature of the human body is commonly regarded as one of the constants of the normal organism. Probably no measurement of bodily manifestations or functions is made as frequently by the physician as is the estimation of body temperature with the clinical thermometer. The clinician recognizes, in contrast with most laymen, that the temperature of normal persons as commonly measured may show a diurnal range of variation of approximately one degree, so that one cannot regard it as absolutely fixed; but this is an insignificant variation in comparison with the changes in the heat relations attending febrile diseases. Furthermore, it is understood by those whose vocation calls for frequent measurement of body temperature that the figures recorded in the rectum, axilla or vagina are somewhat higher than those furnished by the thermometer in the mouth where body temperature is usually measured. The differences here referred to are not absolutely large and are taken into account whenever temperature readings are made the basis of clinical judgment. In view of the regularities of temperature in the healthy organism as indicated by such data of internal or deep seated records, it is commonly assumed that the heat losses are distributed rather evenly through the skin. Recent ingeniously contrived measurements of the temperature of the human skin at the Carnegie Institution Nutrition Laboratory in Boston have shown that a change of temperature in the mouth or rectum need not be coincident with or parallel to changes in the temperature of the surface of the body.[1] The skin temperatures were found to range in a normally clothed person all the way from 33 C. (94.1 F.) about the chest and back to 28 C. (82.4 F.) in the region of the ankles. In a nude person exposed to an environmental temperature of 14.6 C. (58 F.) extreme ranges of 10 C. or more were noted, with a rectal temperature of 36.7 C. Even with well clothed persons the temperature of the skin, though one of the most important factors affecting the loss of heat from the body, is, according to the Boston observers, very far from uniform; in fact, differences in the temperature of various localities of from 4 to 5 C. have regularly been observed.

1. Benedict, F. G.; Miles, W. R., and Johnson, Alice: The Temperature of the Human Skin, Proc. Nat. Acad. Sc. **5**: 218 (June) 1919.

THE CEREBRAL COMPLICATIONS OF MUMPS

Mumps is generally considered a benign infection; but during epidemics it may increase in virulence, and severe complications arise. Of the complications, orchitis, pancreatitis and meningitis are the most important. Meningeal reactions may appear two or three days after the appearance of the swelling, or later as the parotitis is subsiding. Frequently orchitis also develops. The meningitis may manifest itself by increased fever, headache, insomnia, general discomfort, and, according to Acker,[1] exceptionally by nausea, vomiting, rigidity of the neck, Kernig's sign, and pupillary changes. The spinal fluid usually is clear, but is under increased pressure and shows a lymphocytosis. Before the advent of spinal puncture, these meningeal symptoms were spoken of as a meningismus of parotitis; but now the occurrence of actual meningitis in the course of mumps is accepted. In a recent study, Haden[2] remarks that many features of the nervous complications point to an encephalitis, and not simply to a meningitis, and that in most cases the cerebral symptoms are out of all proportion to the meningeal reaction as reflected in the spinal fluid. The occurrence of symptoms of cerebral irritation was noted by Acker, who also records cases with convulsions, monoplegia, hemiplegia or aphasia. Other recent reports seem to confirm the view that the symptoms are due to an involvement of the brain substance; but in the absence of anatomic study of such cases the question remains open. It may be well to recall that, in acute infectious diseases, edema of the brain may produce cerebral symptoms with or without signs of meningeal reaction, and that the spinal fluid in such cases may show no cellular changes. The association of orchitis with meningitis in mumps is of interest in view of the recent report by Latham[3] of epididymitis as a complication of epidemic meningitis. He states that some of the mildest cases of meningitis may show marked epididymal involvement. On the basis of Latham's report that in 70 per cent. of the cases with epididymal involvement the meningococcus was found in the blood, we might assume that analogous invasion of the blood takes place in mumps, and that close study of the blood may throw light on its cause.

1. Acker, G. W.: Parotitis Complicated with Meningitis, Am. J. Dis. Child. **6**: 399 (Dec.) 1913.
2. Haden, R. L.: The Cerebral Complications of Mumps, Arch. Int. Med. **23**: 737 (June) 1919.
3. Latham, J. R.: Epididymitis as a Complication of Meningitis, J. A. M. A. **72**: 175 (Jan. 18) 1919.

Outlines for a Birth-Registration Test.—At present only twenty states and the District of Columbia are included in the birth registration area of the United Sates, and even in these states it has been found that parents and physicians have not attended to this important duty, though the states have been admitted to the list of birth registration states on the basis of 90 per cent. perfect registration. Children's Year workers, in connection with the nation-wide weighing and measuring tests conducted in 1918, found and tested in one town 616 children in which only 192 children were reported as registered; 123 were said to be not registered, and the mothers of 301 children did not know whether the births of their babies had been recorded or not. In another town in which ninety-five children were examined, only seventeen births had been reported. In a Southern state it was found that only 38.4 per cent. of the colored children examined had been registered, while 76.8 per cent. of the white children had been registered. Knowledge of these conditions has led to campaigns for better birth registration, and the Children's Bureau in Miscellaneous Series 12, Bureau Publication 54, has prepared an outline for a birth registration test, giving the plan of canvass step by step and suggesting how to use the results of the canvass, which is to be considered as a necessary part of the community's auditing, at a public mass meeting where the results are announced, by social workers, in talks by physicians and educators, and in connection with other community welfare meetings and activities. A copy of the pamphlet and of the model birth registration law may be had from the Children's Bureau and the Bureau of the Census.

Medical Mobilization and the War

Personnel of the Medical Department

For the week ending September 12, there were 6,598 officers in the Medical Corps, a decrease of 578 from the previous week. The Medical Reserve Corps contained 3,414. The total number of physicians discharged since the beginning of the war is 25,646.

Commission of Reserve Officers as Regulars

Congressman Hawley has introduced a bill in the House which provides that any temporary medical officer who entered the active service in the army on or before April 6, 1917, who was at the date of such entrance between the ages of 22 and 32 years and who served with credit throughout the war, shall on application be regularly commissioned a first lieutenant in the permanent Medical Corps of the Army, and said commission shall be dated as of the date of the entrance of such medical officer into the active service.

Army Reorganization Bill

Following is the exact text of the Army Reorganization Bill, proposed by the War Department and now before Congress, as it relates to the Medical Corps:

"The Medical Department shall consist of the Medical Corps, the Dental Corps, the Veterinary Corps, and the Army Nurse Corps. The Medical Corps shall consist of one major general; two brigadier generals; one hundred and twenty-three colonels; two hundred and eleven lieutenant colonels; nine hundred and twenty-two majors; one thousand seven hundred and fifty-five captains; eight hundred and seventy-eight first lieutenants; one hundred and twenty-five master hospital sergeants; one hundred and twenty-five hospital sergeants; one thousand seven hundred and fifty sergeants, first class; two thousand seven hundred and fifty sergeants; one thousand two hundred and fifty corporals; one hundred and twenty-six mechanics; one thousand seven hundred and sixty-nine wagoners; one thousand one hundred and two cooks; five thousand three hundred and thirty-four privates, first class; and ten thousand six hundred and sixty-nine privates. The Dental Corps shall consist of nineteen colonels; nineteen lieutenant colonels; fifty-nine majors; two hundred and seventy-eight captains; four hundred and eleven first lieutenants; three hundred and fourteen second lieutenants; thirty-four sergeants, first class; one hundred and forty sergeants; one wagoner; three hundred and forty privates, first class; and six hundred and eighty privates. The Veterinary Corps shall consist of five colonels; five lieutenant colonels; fifteen majors; sixty-eight captains; one hundred and one first lieutenants; seventy-six second lieutenants; one hundred and ninety-four sergeants, first class; four hundred and eighty sergeants; ninety-six horseshoers; two hundred and forty corporals; forty-eight saddlers; fifty-four mechanics; nine hundred and sixty stable sergeants; ninety-eight wagoners; ninety-six cooks; eight hundred and sixty-five privates, first class; and one thousand seven hundred and thirty privates. The President is hereby authorized to call into active service, and to retain as long as the conditions of the service require, officers of the Veterinary Reserve Corps, with their consent, in such numbers that, including the number of officers of the Veterinary Corps herein permanently authorized, the total number of veterinary officers on active duty at any time during peace shall not exceed in the respective grades mentioned eleven colonels; nine lieutenant colonels; thirty majors; one hundred and thirty-six captains; two hundred and two first lieutenants; and one hundred and fifty-two second lieutenants. The enlisted strength for the Veterinary Corps provided in this section shall be varied in accordance with the number of draft and riding animals in the Army so that the total number of enlisted men shall not exceed forty for each thousand animals, and the proportions of enlisted men in the various grades shall be approximately as set forth in this Act. The Army Nurse Corps shall be constituted as now provided by law. The general officers herein provided for shall be appointed from officers of the next lower grade in the Medical Corps."

Major-Gen. M. W. Ireland, the Surgeon-General, recently appeared before the Senate Committee on Military Affairs and offered numerous objections to the above provisions. He pointed out that the bill does not provide for any Surgeon-General to act as chief of the Medical Department, and also that it makes no mention of the enlisted personnel of the Medical Department. He also showed that it makes no provision for granting commissions on the basis of examination by a board of medical officers, which fact he much regretted. He declared in favor of promotion by seniority, rather than by selection and was much opposed to the selective method, declaring that it was destructive to the morale of the officers. The Surgeon-General also favored allowing the Medical Department to have general supervision over the procurement and transportation of the supplies for the department. He said that the various branches of the Medical Corps cooperated very effectively during the war. In reply to questions as to whether he favored granting army rank to nurses, General Ireland said that he thought it would be "wholly wrong" to do so.

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA
San Diego—Thomas R. W.

GEORGIA
Atlanta—Blosser, R.
Augusta—Cutter, W. D.

INDIANA
Fort Wayne—Schanz, R. F.

IOWA
Keokuk—Smith, F. C.

MAINE
West Woolwich—Stott, A. A.

MARYLAND
Baltimore—Duncan, R. E.
Hundley, F. S.
Macke, C. E.

MASSACHUSETTS
Beverly—Cowles, D.
Watertown—Chase, C. O.

MICHIGAN
Detroit—Henderson, W. E.
Murray, G. M.
Reed, F. R.
Pontiac—Prall, H. J.

MISSOURI
Kirksville—Costolow, W. E.

NEW YORK
Brooklyn—De Yoanna, G.
Mount Vernon—Quinn, C. M.
Rochester—Wehle, F. W. A.

PENNSYLVANIA
Pittsburgh—Barb, K. B.

TEXAS
Comanche—Farmer, H. L.

VIRGINIA
Clifton Forge—Wolfe, H. C.
Norfolk—Trigg, D.

WEST VIRGINIA
Wheeling—Caldwell, J. H.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

NOTE.—In the following list, L. signifies lieutenant; C., captain; M., major; L. C., lieutenant-colonel, and Col., colonel.

ALABAMA
Birmingham—Siniard, E. C. (L.)
Dothan—Page, W. G. (C.)
Huntsville—Rousseau, W. R. (L.)
Mobile—Thames, E. (L.)
Plantersville — Pickering, A. B. (C.)

ARIZONA
Safford—Martin, G. S. (M.)

ARKANSAS
Arkadelphia—Wallis, C. (L.)
Blytheville—Polk, W. T. (C.)
Hackett—Haney, E. L. (L.)
Jonesboro—Ramsey, J. W. (C.)
Lepanto—Byler, C. E. (L.)

CALIFORNIA
Los Angeles—Hall, E. H. (L.)
Moody, E. E. (C.)
Ojai—Gardner, J. T. (C.)
Pasadena—Fiske, H. A. (M.)
San Francisco—Gleason, C. D. R. (C.)
King, H. R. (L.)
Morgan, N. D. (M.)
San Jose—Hare, C. B. (C.)
Tropico—Mabry, W. C. (C.)

COLORADO
Colorado Springs—Bancroft, G. W. (M.)
Drake—Maitland, L. M. (L.)
Las Animas—Simmons, R. R. (C.)
Monte Vista—Waters, P. A. (L.)
Pueblo—Epler, J. C. (L. C.)

CONNECTICUT
New London—Ganey, J. M. (L.)

DISTRICT OF COLUMBIA
Washington—Hayes, H. L. (C.)
Heller, J. M. (L. C.)
Huntington, W. H. (C.)
O'Donnell, W. F. (C.)
Schurmeier, H. L. (M.)
Stewart, H. D. (C.)
White, J. B. (L.)

FLORIDA
Citra—Blackshear, E. (C.)
Jacksonville—Norwood, J. K. (C.)
Lake Land—Watson, W. H. (L.)
Tampa—Gilmer, E. S. (C.)

GEORGIA
Atlanta—Giuffrida, F. J. (L.)
Wilson, R. F. (L.)
Augusta—Wilcox, E. A. (C.)
Colquitt—Bird, B. C. (C.)
Meansville—Carter, R. L. (C.)
Montezuma—Lightner, H. G. (C.)

IDAHO
Bonner Ferry—Faucett, S. T. (C.)
Pocatello—Scroggs, W. P. (L.)

ILLINOIS
Anna—Hunsaker, C. A. (C.)
Centralia—Hall, J. C. (M.)
Chicago—Axelrad, S. (L.)
Browning, F. E. (C.)
Dufour, E. H. (L.)
Ellis, J. D. (L.)
Elston, L. W. (L.)
Jaffe, J. (L.)
Leach, J. (L.)
McCarty, J. J. (L.)
Merritt, F. W. (M.)
O'Connor, P. P. (L.)
Parkes, C. H. (M.)
Rydin, C. G. (C.)
Schultz, O. T. (C.)
Traxler, P. S. (L.)
Webster, R. W. (M.)
Danville—Barton, F. W. (M.)
Easton—Hanson, M. W. (M.)
Elmwood—Long, H. W. (M.)
Fairfield—Garrison, I. L. (C.)
Farina—Bassett, L. C. (L.)
Florid—Brinckerhoff, F. E. (C.)
Galesburg—Erickson, R. J. (L.)
Gilman—Buckner, R. A. (L.)
Odell—Cole, D. T. (C.)
Pana—Burgess, W. (C.)
Peoria—Sims, C. (C.)
Taylorville—Marney, W. J. (C.)
Wheaton—Greig, T. O. (C.)

INDIANA
Crawfordsville—Cary, N. A. (L. C.)
Gary—Hosmer, H. M. (M.)
Greentown—Freeman, E. E. (L.)
Indianapolis — Ensminger, L. A. (M.)
La Porte—Osborn, G. R. (M.)
Logansport—Holmes, W. W. (C.)
Noblesville—Hooke, S. W. (C.)
Plymouth—Woodbury, H. E. (C.)
West Baden—Sharp, H. C. (M.)
West Terre Haute—Danner, R. J. (C.)

IOWA
Council Bluffs—Hawkins, E. L. (C.)
Knoxville—Shappell, A. E. (C.)

KANSAS
Ada—Boyer, U. S. (L.)
Alton—Brown, P. D. (L.)

Ashland—Carson, P. C. (M.)
Elkhart—Hansen, J. H. (C.)
Lincoln—Sutton, J. M. (C.)

KENTUCKY

Berea—Godbey, L. J. (L.)
Carrollton—Calvert, W. L. (C.)
Edgoten—Straube, S. E. (C.)
Harrodsburg — Goddard, W. B. (L.)
Hopkinsville—Davis, U. G. (L.)
Jeffersontown—Shacklette, J. R. (C.)
Louisville—Abell, C. E. (C.)
Cook, J. F. (C.)
Shaunty, G. M. (C.)
Mount Olivet—Claypoole, H. G. (L.)

MAINE

Auburn—Williams, H. L. (C.)
Dexter—Clough, G. H. (C.)
Waterville—Goodrich, E. E. (C.)

MARYLAND

Baltimore—Hollyday, W. M. (L.)
Weltner, F. P. (M.)
Wilkinson, G. R. (L.)

MASSACHUSETTS

Beverly—Stickney, W. G. (M.)
Boston—Bolotow, N. A. (L.)
Dowling, J. L. (L.)
Hutchins, H. T. (M.)
Janes, A. P. (M.)
Johnson, H. L. C. (C.)
Richardson, E. P. (M.)
Savage, J. C. (C.)
Stearns, R. T. (C.)
Strahlmann, L. (L.)
Canton—Kemp, L. S. (L.)
Middleborough—Burkhead, J. H. (L.)
Springfield—Quinn, J. H. (M.)
Waltham—Hinchey, R. (C.)

MICHIGAN

Eastport—Gates, V. M. (C.)
Flint—Morrish, R. S. (M.)
Ironwood—Collins, C. D. (C.)
Lansing—Humphrey, J. A. (L.)
Michigamme—Sicotte, I. (C.)

MINNESOTA

Fergus Falls—Lindberg, D. O. N. (L.)
Minneapolis—Wipperman, P. W. (L.)
Nicollet—Olson, R. G. (C.)
Winona—Lester, C. A. (C.)

MISSISSIPPI

Durant—Elmore, R. C. (M.)

MISSOURI

Springfield—James, E. F. (C.)
St. Louis—Gibson, R. H. (C.)
Jacobs, M. W. (C.)
Wenger, O. C. (C.)

MONTANA

Dillon—Poindexter, F. M. (C.)
Helena—Riddell, W. C. (L. C.)
Kalispell—Reynolds, R. L. (C.)
White Sulphur Springs—Shroat, L. G. (L.)

NEBRASKA

Nebraska City—Edmonds, W. (L.)

NEW HAMPSHIRE

Littleton—Brown, W. O. (C.)
Portsmouth—Walker, W. D. (M.)
Rochester—Morin, J. J. (L.)

NEW JERSEY

Bridgeton—Glendon, W. P. (C.)
Jersey City—Duckett, W. J. (C.)
Newark—Martland, H. S. (M.)
South Amboy—Tadeusiak, B. H. (C.)
Trenton—Sigler, V. B. (C.)

NEW MEXICO

Silver City—Davis, J. R. (L.)

NEW YORK

Arcade—Davis, G. G. (L.)
Bronxville—Beckwith, E. W. (M.)
Brooklyn—Silverman, M. K. (L.)
Van Wart, F. B. (M.)
Buffalo—Edson, R. A. (C.)
Earlville—Newton, M. H. (L.)
Elmhurst—Zimmerman, R. F. (C.)
Hornell—Conway, J. A. (C.)
Kingston—Cranston, W. J. (M.)
New York—Devol, E. (M.)
Doran, W. G. (C.)
Dourmashkin, R. L. (L.)
Gayle, R. F., Jr. (C.)
Malabre, A. L. (C.)
Pease, M. C. (M.)
New York—Radin, M. J. (L.)
Rieser, S. L. (L.)
Taves, A. W. (M.)
Wing, L. A. (C.)
Zinn, P. R. (L.)
Rochester—Buck, T. D. (C.)
Roscoe—Allaben, C. M. (C.)
Schenectady—Gazeley, W. E. (L.)
Syracuse—Pierson, F. S. (L.)
York—Dike, B. H. (C.)

NORTH CAROLINA

Albemarle—Lyday, C. E. (C.)
Charlotte—Craven, T. (L.)
McKay, H. W. (M.)

NORTH DAKOTA

Devils Lake—Fisher, C. (M.)
Grand Forks—Wilson, W. C. (L.)

OHIO

Canton—Exline, C. E. (L.)
Cincinnati—Benus, H. (L.)
Cleveland—Cohen, A. (C.)
Cooper, F. S. (C.)
Jasinski, I. E. (C.)
Placak, J. C. (M.)
Columbus—Bates, L. V. (L.)
Kerschner, J. E. (C.)
Fostoria—Fruth, V. J. (L.)
Lancaster—Caldwell, S. C. (L.)
La Rue—Shira, D. D. (C.)
Morral—Jolley, J. W. (L.)
Ravenna—Nichols, B. H. (C.)
Toledo—Tait, P. G. (L.)
Youngstown—Phipps, L. E. (L.)

OKLAHOMA

Fort Sill—Lipscomb, W. P. (M.)
Oklahoma City—Roland, M. M. (C.)
Purcell—McCurdy, T. C. (C.)

OREGON

Mabel—Palmer, C. H. (M.)
Portland—Bodine, C. D. (L. C.)
Menzies, C. S. (L.)
Springfield—Kester, E. (C.)
Sutherlin—Patterson, O. E. (L.)

PENNSYLVANIA

Allentown—Kleckner, M. S. (L.)
Parnesboro—Dunsmore, A. F. (C.)
Boyertown—Leidy, R. E. (L.)
Dunsmore—Ginley, F. M. (L.)
Glen Olden—Brown, C. P. (M.)
Philadelphia — Broaddus, R. G. (L.)
Donovan, W. M. (L.)
Greenbaum, S. S. (C.)
Moore, P. H. (M.)
Pilkington, A. (M.)
Snead, G. C. (C.)
Sumner, R. D. (C.)
White, J. A. (L.)
Young, C. H. (C.)
Pittsburgh—Decker, H. R. (M.)
Jackson, D. F. (C.)
McCoy, C. L. (L.)
Meckel, L. O. (L.)
Stimson, G. W. (M.)
Wagerseller, J. K. (L.)
Sharon—Massy, H. E. (C.)
Steelton—Peters, J. M. (L.)
Van Dyke—Kerchner, H. S. (C.)

SOUTH CAROLINA

Newberry—Wicker, J. K. (L.)

SOUTH DAKOTA

Dante—Bonza, F. E. (C.)
Rapid City—Bentley, W. S. (M.)
Sturgis—Brooks, J. D. (M.)

TENNESSEE

Clarksville—Brandau, W. H. (L.)
Dyer—Medling, W. L. (L.)
Kingsport—Baker, H. J. (L.)
Martin—Little, R. M. (C.)
Morristown—Fuller, C. J. (C.)
Nashville—Bell, F. G. (C.)
Holcomb, G. W. (L.)
New Tazewell—Carr, J. C. (C.)
Tampico—Lequire, G. D. (C.)
Woodbine—Waller, C. P. (L.)

TEXAS

Dallas—Gilbert, T. C. (L.)
Huckabay—Foster, W. B. (L.)
Lone Oak—Hall, J. H. (C.)
Menard—Dozier, J. V. (C.)

UTAH

Salt Lake City—Hatch, F. F. (L.)

VERMONT

St. Albans—Loftis, C. A. (L.)

VIRGINIA

Norfolk—Fitchett, M. S. (L.)
Phoebus—Hankins, G. G. (L.)

WASHINGTON

Concrete—Mertz, E. F. (C.)
Fort Steilacoom — Stewart, A. C. (C.)
Raymond—Perry, E. R. (C.)
Reardan—Thompson, L. M. (C.)
Spokane—Adams, O. L. (C.)
Crampton, J. H. (C.)
Wenatchee—Seibert, A. W. (L.)

WEST VIRGINIA

Bluefield—Tickle, T. G. (C.)
Hansford—McClees, E. C. (L.)
Huntington—Hodges, F. C. (L.)
Quincy—Robertson, W. B. (C.)

WISCONSIN

Baraboo—Caldwell, F. C. (L.)
Beloit—Maurer, H. C. (L.)
Delavan—Holmes, B. H. (C.)
Green Bay—Charbonneau, A. (L.)
Manitowoc—Shimek, A. J. (M.)
Milwaukee—Gray, A. W. (M.)
Heraty, J. A. (L.)
McNary, J. F. (L.)
Ogema—Pearson, C. M. (C.)
Tomahawk—Baker, G. R. (C.)

WYOMING

Basin—Harris, C. E. (C.)
Laramie—Park, D. B. (C.)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

California and Nevada Reciprocate.—A report from the secretary of the California State Board of Medical Examiners states that reciprocal relations have been established between that state and Nevada, effective, Sept. 1, 1919.

New Board Members.—New members recently appointed to the California State Board of Medical Examiners are: Dr. Lemuel P. Adams, Oakland, vice Dr. Arthur M. Smith, Oakland; Dr. Harry V. Brown, Glendale, vice H. Clifford Loos, San Diego; Dr. Alfred J. Scott, Los Angeles, vice Dr. Harry V. Brown, Glendale, and Cyrus J. Gaddis, Oakland, vice Ernest Sisson.

Personal.—Dr. William Palmer Lucas, professor of diseases of children at the University of California Hospital, San Francisco, has been made a Chevalier of the Legion of Honor, and has also had conferred on him by the French government La Medaille de Vermeil des Epidemies for services rendered to the children of France.——Dr. Lulu Hunt Peters, Los Angeles, who has been on a special mission for the American Red Cross in Serbia for five months, has been appointed to the investigation of orphan asylums in Roumania and Albania.——Edwin M. Schultz, Major, M. C., U. S. Army, has been appointed inspector in experimental pathology in Leland Stanford University.——Dr. William B. Kern, superintendent of the State Hospital at Norwalk, has been exonerated by the board of corrections of charges of brutality, poor food, and insanitary conditions brought against him by a newspaper of southern California.

ILLINOIS

Internship Required for M.D. Degree.—The University of Illinois College of Medicine reports that for all classes matriculating in 1917 and thereafter the students are required to complete a five year course, including a year's internship in a hospital, before the M.D. degree will be conferred. This is the ninth medical school to adopt this requirement.

Medical Service in Schools Continued.—Health Commissioner John D. Robertson of Chicago, after a conference with city and school officials, has consented to divert sufficient funds from the Municipal Tuberculosis Sanatorium to pay the doctors and nurses to continue medical service in public schools for two months.

Illegal Practitioner Fined.—Mrs. Emma Calvin, a chiropractor of Monticello, was arrested by the Illinois Department of Registration and Education for practicing without a license and was fined $150 and costs. This is her second offense. It is understood that Mrs. Calvin will carry the case to the supreme court in order to test the validity of the recent medical practice act.

INDIANA

New Officers.—Dr. C. Norman Howard, Warsaw, was elected president of the Thirteenth District Medical Society at its recent meeting held in Culver; Charles E. Reed, Major, M. C., U. S. Army, Culver, vice president, and Dr. Jahmes A. Work, Elkhart, secretary and treasurer.

Public Health Clinic Opens.—A venereal disease clinic was opened in South Bend, September 1, under the auspices of the United States Public Health Service and under the direction of Dr. Earl R. Bush, Indianapolis. The clinic is located at

312 South Lafayette Boulevard and is open daily from 2 to 4 in the afternoon and from 7 to 8:30 in the evening.

MARYLAND

Personal.—Dr. Edgar B. Friedenwald, Baltimore, who served as major in the Medical Corps since May, 1917, has received his discharge and has returned to his home.——Dr. Charles A. Reifschneider, former superintendent of the University Hospital, Baltimore, has arrived at Camp Merritt, N. J., from overseas, where he served with the Medical Corps.

Eye Clinic for Schoolchildren Proposed.—Dr. Benjamin W. Hazell has offered to equip an eye clinic for the children of the poor of Baltimore, if the city will consent to furnish space, heat and janitor service. Wholesale optical houses will supply glasses at cost and Dr. Hazell and other opticians, will give their services free. Diseased conditions of the eye will not be treated, but will be referred to a proper dispensary. The suggestion has been referred to the committee on hygiene of the board of school commissioners.

Foreigners in Baltimore for Study.—Dr. Juan C. Segovia, director-general of the health board of San Salvador, Salvador, and founder of the Institute for Contagious Diseases in San Salvador, has arrived in Baltimore to take a two years' course in bacteriology and parasitology at the Johns Hopkins University.——M. Biraud, a former officer in the French army, whose home is at Poitiers, France, has been announced as one of the recipients of fourteen scholarships to American universities given to French students by the former "American Army Students of France," and will come to the Johns Hopkins Medical School.

MASSACHUSETTS

Semicentennial of State Health Board.—The Massachusetts Department of Health celebrated the fiftieth anniversary of its establishment at the State House, September 13. Among the chief speakers were Dr. Henry P. Walcott, Boston; Dr. William H. Welch, Baltimore; Asst. Surg. Allan J. McLaughlin, U. S. P. H. S., and Sir Arthur Newsholme of England. The health commissioner, Eugene R. Kelly, Boston, presided, and the visitors were welcomed on behalf of the state by the governor.

Personal.—Dr. Herman Morris Adler, Chicago, formerly assistant professor of psychiatry in Harvard University, has been appointed professor of criminology and head of the department of social hygiene, medical jurisprudence and criminology in the medical department of the University of Illinois, Chicago.——Dr. Louis W. Croke, Dorchester, medical director of the U. S. Shipping Board, Recruiting Service, has resigned.——The cross of the Legion of Honor was officially presented to Dr. Morton Prince, in the Hall of Flags of the State House in recognition of his distinguished service in promoting Franco-American cooperation during the late war.

MISSOURI

Child Clinic Opened.—September 1, a child clinic, with Dr. Frank C. Neff in charge, and a dental clinic for children and adults was opened as a portion of the outpatient department of the Research Hospital, Kansas City.

District Society Organized.—Physicians from Clinton, Caldwell, Daviess, Platte, Ray and Clay counties met in Cameron, August 14, and organized the Twelfth Councilor District Medical Association, electing Dr. John D. Musgrave president, and Dr. John J. Gaines secretary, both of Excelsior Springs.

NEW YORK

Personal.—Dr. William L. Munson, Granville, who has recently returned from military service, has been reassigned to duty as sanitary supervisor of Clinton, Essex, Warren, Washington counties and part of Franklin County.——Dr. John A. Conway, Hornell, has returned from service and has resumed his duties as sanitary supervisor for Steuben, Tompkins, Schuyler, Chemung, Tioga and Broome counties.——Dr. Frank Overton, sanitary supervisor for Long Island, has been temporarily assigned to Albany for the last four days of each week as sanitary supervisor for Columbia, Greene, Rensselaer, Albany, Schoharie and Schenectady counties, during the absence of Dr. Charles C. Duryee on special duty in connection with health offices' courses and scoring of health activities of cities.——Dr. Matthias Nichols has been appointed head of the advisory committee of the International Exposition of Municipal Equipment, Grand Central Palace, New York City.

New Hospital for Insane.—Governor Smith broke ground, September 13, for a new state hospital for the insane at Marcy, near Utica. The site of the institution comprises 930 acres of the best farm land in the state and the legislature has authorized the expenditure of $2,000,000 on the buildings, which will house 3,000 patients. Abundant provision has been made for a water supply and sewage disposal at Marcy so that a setback such as that encountered in the attempt to establish a state hospital at Mohansic may be avoided. The governor in his address told of plans that are being made by the hospital commission for a state psychopathic hospital in New York City, which will be the research department for the state hospitals for scientific studies into the causes and treatment of insanity, and which will also be used for the temporary care of the less serious cases of mental disorders. Among the other speakers were Dr. Charles W. Pilgrim, Poughkeepsie, and Dr. Walter B. James, New York City.

Health Activities.—In connection with the International Exposition of Municipal Equipment it is proposed to establish a permanent health center which will serve to demonstrate the kind and amount of apparatus and equipment necessary for such an undertaking.—The West Chester County Chapter of the American Red Cross has established a model child welfare station in the interior of an auto-truck and has sent this exhibit into a number of towns of West Chester County.——An infant welfare exhibit and baby show was given at Gouverneur Fair during the week of August 19, under the auspices of Dr. Stanley W. Sayer, sanitary supervisor of the district, and Miss Winifred Noone of the child hygiene division of the state department of health.——A health meeting was held on the Tonawanda Indian Reservation, August 27, together with a survey and clinic.——A tabulation of the reports of health officers for 1916 has been compiled from which it appears that during that year, the average amount paid per capita for health work was 19 cents. ——The board of health of Elmira has authorized the establishment of a general clinic in Elmira to include child welfare work and measures against tuberculosis and venereal disease.——Dr. J. Henri LaRocque, health officer of Plattsburg, is having fitted up a suite of offices in the city health department which will accommodate clinics for tuberculosis, infant welfare and venereal diseases.——Dr. Virgil D. Selleck, health officer of Glens Falls, is making arrangements for venereal disease clinics.

New York City

Annex to Beth David Hospital.—A drive to raise $100,000 for the enlargement of Beth David Hospital was begun, September 7, and will be continued for three weeks. The proposed annex to the building will add 125 beds and will bring the capacity of the hospital up to 175. A donation of $5,000 toward the fund from the Ladies' League of the hospital and $500 from Jacob D. Cohen were announced.

Health Department Moves to New Headquarters.—By September 25, the headquarters of the department of health, now at Centre and Walker streets, will have been removed to Pearl and Park streets, across the street from the Municipal Building. This removal was necessitated by the expiration of the lease on the building at Centre and Walker streets and the refusal of the comptroller and the board of estimate to consider the exorbitant increase in rental demanded by the landlord. The new headquarters will be used temporarily until the specially built structure for which plans are now being prepared can be erected. It is hoped that this new building will be ready for occupancy in about a year.

NORTH CAROLINA

Hospital Opened.—The Lawrence Hospital, Winston-Salem, was opened, September 1. The building is the old Thompson home which has been remodeled for hospital purposes and now has accommodation for twenty-five patients. The institution is in charge of Dr. Charles S. Lawrence and G. Carlyle Cooke.

Personal.—Dr. Frank M. Register, Jackson, health officer of Northampton County for two years, has resigned to accept a position as chief of the bureau of epidemiology of the state board of health at Raleigh.——Dr. Sidney E. Buchanan, Concord, has been elected full-time health officer of Cabarrus County.——Dr. Wilbur B. Robertson, Tarboro, health officer of Edgecombe County, has resigned and has been temporarily succeeded by Dr. William W. Green.

PENNSYLVANIA

State Meeting.—The annual meeting of the Medical Society of the State of Pennsylvania will be held in Harrisburg, September 22 to 25.

Personal.—Dr. Nelson E. Newbury, Scranton, has been appointed director of the city health department.——Dr. Julius H. Comroe has been appointed chief of the genito-urinary dispensary at York.——Dr. Edward E. Marsh, Centralia, recently returned from service abroad, has been elected superintendent of the Pottsville Hospital.——Dr. George W. Stimson, Pittsburgh, Major, M. C., U. S. Army, who has been serving in France as otolaryngologist with Evacuation Hospital No. 31, has returned from overseas.——Dr. James R. Montgomery, Bloomsburg, reeently returned from active service in France, was, August 15, appointed county medical officer, succeeding Dr. Samuel B. Arment, resigned.

Philadelphia

Personal.—Dr. P. Gaskell Skillern, Jr., who was senior medical officer on the *U. S. S. Orizaba* while the ship was commissioned by the French government, has sailed for Denmark where it is reported, he is to marry Miss Lisa Valentiner of Koge.——Dr. Alonzo Englebert Taylor of the University of Pennsylvania will give the Lane Lecture before the Stanford University Medical School, California, in December.

New Department of Public Health.—The new Philadelphia charter has so affected the department of public health and charities as to separate the health work from its charity functions. Under the terms of the new law, there is a department of public health of which the director of public health is the head, appointed by the mayor with the advice and consent of the council. He is to have the power to appoint an assistant director, and such other officers and employees as may be provided for. The department has the care, management, administration and supervision of city activities relating to public health, including hospitals, control of housing and sanitation, and collection of vital statistics. The board of health is to consist of the director of public health, as president, and two other members, who shall be appointed by the mayor with the consent of the council. Two of the members of the board must be physicians.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that no award of the Alvarenga Prize has been made for 1919, and that the next award of the prize, being the income of one year of the bequest of the late Señor Alvarenga amounting to about $250, will be made, July 14, 1920, provided an essay deemed by the committee of awards worthy of the prize shall have been offered. Essays entered for competition may be on any subject, but cannot have been published; must be typewritten and if in a language other than English must be accompanied by an English translation and must be received by Dr. Francis R. Packard, secretary of the College, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1920. Each essay must be sent without signature, but must be marked with a motto accompanied with a sealed envelope having on its outside the motto and inside the name and address of the author. The successful essay or a copy of it is to remain in the possession of the college. Other essays will be returned on application within three months after the award.

TEXAS

Personal.—Dr. A. P. Harrison, Corsicana, has been appointed state director of the bureau of rural hygiene, succeeding Dr. Platt W. Covington, Austin, resigned.——Dr. Marshall E. Parker, Anderson, has been reappointed state registrar of vital statistics.——Dr. Victor E. Bonelli, Corpus Christi, has been appointed city school physician of Fort Worth.——Dr. Lane B. Cooke has been appointed city health officer of Dallas.

Quarantine Merger.—September 1, Robert L. Wilson, Surg., U. S. P. H. S., in charge of the quarantine station at Galveston, took over the equipment of the full quarantine station at the city of Galveston and with this transfer the dual system of quarantine service of the port of Galveston ceased to exist. The quarantine properties of the city were sold to the United States for $90,000. The property was valued at $116,000. It is estimated that by the transfer of the property to the United States, there will be a saving for the state of more than $210,000.

Cooperation in Health Work.—Dr. Charles W. Goddard, Holland, president of the state board of health, August 27, completed the draft of the contract whereby the state of Texas and the International Health Board offer $5,000 to each of four counties appropriating a similar amount for a county health department with a whole-time health officer. Special provision is made for active work to stop soil pollution and the combating of hookworm. The county health officer is to be appointed by the state health officer as also are his assistants in sanitary work.

WISCONSIN

Medical Building for Ashland.—Dr. John M. Dodd, Ashland, has awarded a contract for a new office building which will cost $25,000 or more and will be equipped with seven new offices, each of which will be occupied by a physician or a dentist.

Personal.—Dr. Fred T. Nye, Beloit, has retired after forty years of active practice, and will move in a short time to Irvington, Ala.——Dr. Herman H. Albers, Allenton, was elected president of the First District Medical Society at its meeting held near Waukesha, August 20.

CANADA

Educating Young Physicians.—The Ontario Medical Council adopted the following resolution at its recent meeting: "That all physicians who had had only one year of practice before enlisting in the army, be compelled to take a six months' postgraduate course, and that the Ontario government give a grant of $500 to cover such expenses."

Medical Council Elects Officers.—At the recent meeting of the Medical Council of Canada, Dr. J. C. Connell of Kingston, Ont., was elected president; Dr. Alex MacNeill of Summerside, P. E. I., vice president, and the following were reelected: Sir Thomas Roddick, honorary president; Dr. R. W. Rowell, Ottawa, registrar, and Mr. F. H. Chrysler, general counsel.

Hospital News.—The Kingston General Hospital will build a special wing for the treatment of tuberculous patients. This is in connection with the hospital enlargement scheme of Queens Medical Department.——The city council of Niagara Falls has apportioned $50,000 toward a 100-bed hospital to cost $100,000.——The county council of Huron County, Ont., has approved a grant of $50,000 for hospital purposes.

Personal.—Dr. Theodore A. Lomer, D.S.O., medical officer of health for Ottawa, has returned from overseas.——Dr. George S. Strathy, Toronto, has returned from overseas.——Major George D. Porter, Toronto, has resigned his position as commanding officer, Divisional Laboratory No. 2, after three and a half years' service.——Dr. Robert E. Wodehouse, M.O.H., Fort William District for Ontario, has been made an officer of the British Empire.

Council for Combating Venereal Disease.—The Canadian National Council for combating venereal disease has recently been organized. The aims and objects being to combat venereal diseases by whatever means seem desirable, to encourage and assist the dissemination of a sound knowledge of the physiologic and moral laws of life in order to raise the standard both of health and conduct; to cooperate with existing associations, to seek their approval and support and to give advice when desired in order to provide the constituent social measures which are basic in the solution of this problem; to promote such legislative, social and administrative forms as are relevant to the foregoing aims and objects; to provide accurate and enlightened information as to the prevalence of these diseases, and as to the necessity for early treatment; to promote the provision of greater facilities for their treatment and to increase the opportunities of medical students, practitioners and trained nurses for the study of these diseases.

GENERAL

Warning.—Dr. Eugene M. Stansbury, Vermilion, S. D., writes to warn the profession against a man claiming to represent a supply company of St. Louis, Mo., selling auto supplies to members at factory prices. He offers two years' service for $60, calling only on physicians. A letter addressed to the concern at St. Louis, Mo., is returned, stating that there is no such company nor such a street address.

Dietitians Elect Officers.—At the annual meeting of the American Dietetics Association held in Cincinnati, last week, Miss Lulu Graves, professor of home economics in Cornell University, Ithaca, N. Y., was elected president; Miss Ruth Wheeler, Baltimore, and Miss Margaret Deevers, Mount Sinai Hospital, Cleveland, were made vice presidents; Miss

E. Geraghty, New Haven, Conn., was elected secretary, and Miss Margaret Sawyer, American Red Cross, Washington, D. C., treasurer.

Military Surgeons' Meeting.—The annual meeting of the Association of Military Surgeons of the United States will be held at the Hotel Statler, St. Louis, October 13 to 15. Commissioned officers of the Army, Navy, Public Health Service and National Guard, members of the Medical Reserve Corps and physicians who have been commissioned and subsequently honorably discharged from the service are eligible to membership and will be welcomed at this meeting of the association.

Hospital Association Election.—At the twenty-first annual meeting of the American Hospital Association held at Cincinnati, September 8 to 13, under the presidency of Dr. Andrew R. Warner, Cleveland, the following officers were elected: president, Dr. Joseph B. Howland, Boston; president-elect, Lewis R. Baldwin, superintendent of the University Hospital, Minneapolis; vice presidents, Drs. Henry E. Webster, Montreal; Richard G. Brodrick, San Francisco, and Miss Margaret Rogers, St. Louis, and treasurer, Mr. Asa A. Bacon, superintendent of the Presbyterian Hospital, Chicago.

Graduate Medical Fellowships for Negroes.—Mr. Julius Rosenwald of Chicago is offering six fellowships to negro graduates in medicine by which they may pursue advanced studies in the fundamental medical sciences under favorable conditions. Each fellowship stipend will be $1,200 to pay the student's transportation to and from the institution in which he will work as well as his laboratory and tuition fees, books and living expenses. The medical schools in which these fellowships will be available will be selected by a special committee under the direction of the General Education Board, New York City.

Bequests and Donations.—The following bequests and donations have recently been announced:

For the enlargement of the Winston-Salem, N. C., Hospital, an addition of $50,000 to the gift of her late husband, by Mrs. Reynolds.

Permanent fund of the Infant's Hospital, Thomas Morgan Rotch Memorial Building, Boston, $6,000 by the will of Clara Morgan Rotch.

To improve and extend the workshop of the Saginaw, Mich., Anti-Tuberculosis Hospital, a donation of $500 by E. C. Mershon.

Johns Hopkins Hospital, Baltimore, $250,000, contingent on the expiration of annuities, by the will of John W. Grace, Baltimore.

For a maternity hospital at Hastings, Neb., $40,000 and for the Mary Lanning Memorial Hospital, Hastings, Neb., $300,000 by the will of W. H. Lanning.

Michael Reese Hospital, Chicago, $84,000, on the death of Mrs. Emma Rosenthal, by the will of Albert Dallemand.

Kenosha, Wis., Hospital, $16,000, by the will of Elizabeth M. Moore.

Pathometry of the Influenza Epidemic.—The subcommittee on pathometry of the influenza epidemic, of the special committee on statistical study of the influenza epidemic which was reorganized at the meeting of the Section of Vital Statistics of the American Public Health Association in December, 1918, held meetings at Columbia University, New York, September 19 and 20. The discussion at the preliminary meetings of the committee brought out a rather confusing lack of agreement as to the effects of preventive measures and of modes of treatment on the form of the epidemic wave and as to the kinds and character of statistical data available. The work and recommendations of the other three registration and tabulation subcommittees will, it is hoped, result in presenting data that are uniform and better adapted to comparative study toward discovering the quantitative relationships which this epidemic holds in common with other epidemics.

Executive Committee of National Tuberculosis Association Meets.—The executive committee of the National Tuberculosis Association met at the Russell Sage Foundation in New York City, September 13, at which time a survey of the tuberculosis situation in the United States was presented which shows that the country is face to face with a condition more menacing to the people than actual warfare. This survey shows an annual death rate of 150,000 from tuberculosis in the United States and more than 1,000,000 active cases in the nation. To combat the spread of the disease the committee asserts that an intensive national campaign is necessary. Funds for this campaign will be sought by a ten day sale of Red Cross seals, beginning December 1. The total of the state budgets will be more than $6,500,000. In the course of the discussion, it was pointed out that the death rate of 150,000 a year from one preventable disease means the sacrifice of more lives than the United States Army lost in the year it was actively engaged in the war. An educational campaign has been formulated which will be extended to every part of the country, with the view of impressing on the people that tuberculosis is preventable and curable and of inducing them to take measures to protect themselves. Plans to care for all afflicted persons will be pressed and a special effort will be made to search out incipient cases.

Workers in Venereal Disease Campaign Wanted.—The recently created Interdepartmental Social Hygiene Board of the United States government is in need of a number of specially trained men and women to complete its organization. The United States Civil Service Commission has announced examinations for the following positions: chief of division for scientific research, $3,500 to $4,500 a year; chief of division for educational research and development, $3,500 to $4,500 a year; educational assistant, $2,800 to $3,600 a year; chief of division of relations with states, $3,500 to $4,500 a year; chief of division of records, information and planning, $3,500 to $4,500 a year; supervising assistant and inspector, $2,800 to $3,600 a year; field agent, $1,800 to $3,000 a year. All positions are open to both men and women. Applicants for these positions will not be given scholastic tests in an examination room but will be rated on their education, experience and writings. Published writings of which the applicant is the author will be submitted with the application. For most of the positions a thesis on one of a number of given subjects will be accepted in lieu of published writings. The receipt of applications will close, November 4. Detailed information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board at the postoffice or custom house in any of 3,000 cities. The law creating the Interdepartmental Social Hygiene Board provides for the cooperation of the War and Navy Departments and the Public Health Service of the Treasury Department for the prevention, control, and treatment of venereal diseases. The duties of the board as set forth in the act are: to recommend rules and regulations for the expenditure of moneys allotted to states for the use of their respective boards or departments of health in the prevention, control, and treatment of venereal diseases; to select universities, colleges, or other suitable institutions which shall receive allotments for scientific research for the purpose of discovering more effective medical measures for the prevention and treatment of venereal diseases; to recommend such general measures as will promote correlation and efficiency in carrying out the purposes of the act; and to direct the expenditure of certain moneys appropriated by the act.

FOREIGN

Mortality Increase at Riga.—It is reported from Riga that the mortality during April last was eight times as large as in pre-war times. During June there were 359 deaths caused by starvation.

Meeting of the Italian Orthopedic Association.—The tenth Congress of the Italian Society of Orthopedics will be held at Bologna, October 19 and 20, 1919. The subjects for discussion will be Prostheses and the Treatment of Pseudo-arthroses. By special invitation, Prof. Carlos Francioni will deliver a lecture on "The Morphologic Evolution of the Human Organism in the First Stage of Life." In connection with the congress there will be held an exhibition of orthopedic apparatus and instruments.

Mortality in Spain.—The decrease in the population of Spain has begun to cause serious concern. During February last the average birth rate in the most important cities was 2.12 per thousand while the mortality rate was 2.42. In twenty-nine of the provincial capitals the number of deaths exceeded the number of births. These capitals included every important city in Spain. At Madrid, the death rate was 2.55 and the birth rate was 1.84. Over one fourth of the deaths in the various cities were among infants under 5 years.

American Medical School in Paris.—The project for the establishment of the American School of Medicine in Paris took definite shape at the meeting held recently in the office of Charles F. Beach, an American lawyer in Paris. In addition to a number of laymen, Drs. Tuffier of the Academy of Medicine, Dehelly, Alexis Carrel, Edmond Bornet, and other noted physicians and surgeons of Paris were present. The new school is to be entirely postgraduate in character, and will be under the joint direction of American and French physicians.

New Public Health Act in South Africa.—The parliament of the Union of South Africa has adopted a comprehensive bill known as the Public Health Act, 1919, chapter four of which deals with venereal diseases and applies to most of the

health measures which have been adopted in the United States with the exception of the compulsory report of cases to the health authorities. Compulsory treatment of all cases is provided and any person who infects another knowingly is declared guilty of an offense. Advertisement of nostrums is prohibited.

Deaths in the Profession Abroad.—Dr. **A. Tamburini,** professor of psychiatry at the University of Rome and director of the psychiatric clinic, aged 71. He was elected president of the Italian Societá freniatrica in 1895, and has been constantly reelected since, and has always been called on to preside at the Italian psychiatric congresses. He was long a member of the national public health council and recently published a large work on the care of the insane by the state in different countries. For forty years he has been director of the *Rivista sperimentale di Freniatria.*——Dr. **C. Vignolo-Lutati,** instructor in skin and venereal diseases at the University of Turin, and a noted writer on these subjects.

The Monaco Congress for Physiotherapy.—Great preparations have long been under way for this international gathering at Monaco in October which aims to extend the knowledge and application of the natural resources of the allied and neutral nations, the mineral waters and muds, the seashore, climate, altitude, sunlight, etc. There are to be special congresses and sections devoted to thalassotherapy, hydrology, heliotherapy, hygiene, spas, climatic resorts and touring, alpine climbing, etc. France and Italy in particular are making efforts to present an instructive display of their natural resources in these lines. French is the official language of the thalassotherapy congress and the only theme appointed for discussion is "Medical and Surgical Tuberculosis at the Seashore," but other communications on other subjects are to be presented.

Medical Gatherings in the Scandinavian Countries.—The *Ugeskrift for Laeger* comments that after the long suspension on account of the war, medical congresses are now being held in the Northland with new zeal and profit. The surgical and dermatologic congresses were held at Christiania in July. In August the tuberculosis specialists, the pediatrists and the internists each held a special congress at Copenhagen where in September was also held the Nordiske hygieniske Kongres. The Medical League of Sweden and the similar organization in Denmark held their meetings also in August, as already mentioned elsewhere. Many physicians attended several of these meetings in turn. At the Congress for Internal Medicine the registration was 215, the attendance including eighty physicians from Sweden, seventy from Denmark, forty-six from Norway, eighteen from Finland and one from Iceland. Almost the whole range of internal medicine was represented in the forty-two communications presented. They included a number of interesting reports on research by the younger workers.

LATIN AMERICA

Nurses' School in Colombia.—At the Women's University, just established at Medellín, Colombia, there will be given a two years' course in nursing.

Study of Influenza.—Dr. Antonio Cueto Vásquez, the secretary of the commission on infectious diseases, has been sent to the United States by the government of Cuba to study the treatment of influenza as practiced in this country.

Typhoid Epidemic in Bogotá.—It is reported from Bogotá, Colombia, that a serious epidemic of typhoid has appeared in that city. It is said that as many as fifteen patients had been taken in one day to the Hospital of San Juan de Dios.

New Pasteur Institute in Mexico.—On recommendation of the president of the superior board of health, the government has decided to open a Pasteur Institute in the city of Chiapas, in view of the fact that a large proportion of rabies cases proceed from that state.

Superior Board of Health Organized in Nicaragua.—The government has just appointed the personnel of the superior board of public health, which will consist of members of the medical profession of the city of Granada. Dr. Juan José Martinez was appointed president of the board.

New Tropical Medicine Society in Mexico.—A medical association has just been organized at Villahermosa, Mexico, under the title of *Sociedad Tabasqueña de Patologia Tropical.* Its object will be to study the diseases which affect that region. The following officers have been elected: president, Dr. Jesús Flores; secretary, Dr. Otilio Aguilar C; assistant secretary, Dr. Eduardo Castellanos Q., and treasurer, Dr. Diógenes López R.

PARIS LETTER

Paris, Aug. 28, 1919.

The Transfusion of Blood in Shock Produced by War Wounds

At a recent meeting of the Société de chirurgie de Paris, Drs. Lacoste, Lartigaut and Picqué, hospital surgeons of Paris, communicated the results that they have secured from the transfusion of blood in thirty-six cases of war wounded. They were not in position to study the density of the blood, a research recommended by Richet, but they undertook a blood count after the method of Depage and Govaerts, and they studied especially the arterial tension with the aid of Pachon's oscillometer.

Lacoste, Lartigaut and Picqué made a blood examination in thirteen wounded men, eight of whom presented a deficiency of blood cells such as is considered by Depage and Govaerts as symptomatic of a serious hemorrhagic condition and as beyond the reach of ordinary therapeutics. These patients presented at the same time clinical symptoms extremely indicative of serious posthemorrhagic anemia, and yielded a mortality of 25 per cent. However, in this series of thirteen patients there were five in whom the hemorrhagic syndrome was at least as frank and just as alarming as in the other cases but who nevertheless did not present an appreciable diminution in the number of blood cells. Among these five patients there were no fatal cases. Therefore, from the practical standpoint, in case a patient is clinically hemorrhagic it is well to make a blood cell count. In the event that the deficiency reaches limits considered by Dupage and Govaerts as alarming, the surgeon has an added reason for blood transfusion. But one should not conclude that the maintenance of a normal or approximately normal blood count for the first few hours is a sufficient contraindication for transfusion, and that it justifies one in relying on a satisfactory improvement in the blood picture. In more than a third of the cases there is a discrepancy between the blood picture and the serious indications of acute anemia. Nor should the indications for blood transfusion be based solely on the result of the blood cell count but rather more on a study of arterial tension.

Out of approximately 1,600 grave untransportable cases, Lacoste, Lartigaut and Picqué found only thirty-six cases in which transfusion was indicated, thirty-three of which were due to hemorrhagic and three to nonhemorrhagic shock. In seven cases of this series they performed preoperative transfusion on moribund men who were pulseless, presented no arterial tension, and were insensible to artificial serums, such men as would have died at the beginning of the war before the eyes of the surgeon, whereas, today, many such patients, thanks to blood transfusion, can be put into condition to sustain an operation successfully. Immediate postoperative transfusion performed in order to improve the general condition of the wounded to whom the shock of an unavoidable immediate operation has come in addition to traumatic shock were also seven in number. These transfusions permitted the extension of the indications for surgical procedure in wounded men on whom formerly an operation could not have been attempted.

The other transfusions were late postoperative. These concern wounded men who, under the influence of artificial serums, camphorated oil, caffein, etc., had made a temporary gain but relapsed into a state of shock. The transfusion supervening at the time when the first medication has become ineffective may then save some patients. Others, moreover, do not react to the serums and present a progressive lowering of the arterial tension with a decrease in the maximal and minimal pressure, a fall of the oscillometric index, reduction of the differential pressure of the range of oscillation; in such cases transfusion is instituted without delay.

Repatriation of Prisoners of War

The international committee of the Red Cross has addressed a letter from Geneva to the interallied conference in Paris calling attention to the question of repatriation of prisoners of war. The letter refers to the difficulties encountered at the time of the repatriation of the prisoners from entente countries interned in the states of the central empires. It states that if the repatriation cannot be begun immediately, at least plans for the repatriation ought to be worked out at once in order that the actual transportation may be begun as soon as the peace treaty is ratified and be an accomplished fact by the time winter sets in. Such provision is especially indicated in view of the various difficulties that may arise on account of the large number of prisoners and the great distances some of them must be transported.

Interallied Medical Mission to Poland

An interallied medical mission consisting of Col. H. S. Cumming, representative of the Medical Corps, U. S. Army, as director; Professor Castellani; George S. Buchanan, an officer of the British Public Health Service, and Dr. Visbecq, chief surgeon of the Medical Corps of the French Army, has just left Paris for Warsaw. At the request of the Polish government this mission has been sent to Poland to study the problem of typhus fever and other contagious and epidemic diseases that are making great ravages in Poland at this time. This mission was organized by the Red Cross League.

The American Red Cross in France

The American Red Cross has just published a report of its work in connection with the American army in France. It received in its hospitals 89,539 wounded or sick, who required 1,110,000 days of hospitalization. The average cost of a day's hospitalization, including medical and surgical care, has been 9.78 francs. At the time of the signing of the armistice the American Red Cross had under its control twenty-two hospitals with 14,326 occupied beds.

The American national committee has just made a gift of $32,742.95 to the American Red Cross, to create at Paris an American hospital for wounds of the face and jaw. Soldiers disfigured by war wounds will be admitted here for treatment.

The Optical Institute

In a previous letter I referred to the plan of establishing an optical institute with a view to restoring in France the manufacture of optical lenses and optical instruments in general, which of late years has passed into the hands of the Germans (THE JOURNAL, Dec. 23, 1916, p. 1954). This institute has become an actual fact. It will work in the interest of all French manufacturers of opticians' supplies; it will not be conducted for commercial profit but solely for the purpose of advancing optical science and the optical industries for the common welfare. The forms of activity of this new scientific institute will be: (1) a training school of optics; (2) a laboratory of research and experiment, and (3) a professional school for advanced study.

The school of optics will train experts in the manufacture of optical goods. M. C. Fabry, at present professor of general physics at the Faculté des sciences de Marseille, has been selected as the head of the new institution. Mr. Lucien Poincairé, rector of the University of Paris, has evinced an especial interest in the institute and has expressed his intention of requesting a professional chair of optics at the Sorbonne.

The laboratories will comprise a research department in which the instructors of the school may conduct their theoretical and practical researches with relation to the various kinds of glass, optical instruments and opticians' accessories, and a department for the study of manufactured products or any matters of importance submitted for examination into by the institute. These laboratories will serve likewise for the training of students. The purpose of the professional school will be to train workers in glass, opticians and mechanicians who shall be preeminently qualified.

The Origin of Shock

At the meeting, July 15, of the Academy of Science, Professor Quénu presented an interesting report of some investigations of Dr. Pierre Delbet, professor of clinical surgery at the Paris School of Medicine, on the toxicity of lacerated muscles from the standpoint of the pathogenesis of shock. Delbet undertook numerous experiments. He removed the crushed and lacerated muscles of 121 animals, including rabbits, rats, mice, frogs and eels, and injected the filtrate of these tissues in 213 animals. The toxic effects were noted in every instance, and the animals developed polypnea, disappearance of reflexes, and coma, frequently ending in death. Recovery is possible even after coma sets in. The early deaths which supervene in from a few minutes to six or seven hours after injection, without the animal coming out of the coma, seem to be due to the intoxication of the cerebral and bulbar nervous centers. The retarded deaths which take place after the animals have recovered from the coma are due mainly to liver alterations. Muscular tissue infected by the streptococcus, the staphylococcus, the proteus or the *B. pyocyaneus* appeared less toxic than the aseptic tissue.

The toxic accidents are always of the same type, but they vary greatly in intensity. The same character of dose may produce insignificant results or may have a mortal effect. Gray rats and frogs, which are eminently carnivorous, proved much more susceptible than guinea-pigs, which are herbivorous. These facts developed by experiment led to the suspicion that the strong meat diet of the soldiers was one of the causes of the frequent severe symptoms of shock during the war.

LONDON LETTER

LONDON, Aug. 27, 1919.

Punishment of Pharmacists Under the Venereal Diseases Act

The venereal diseases act of 1917 marked a new departure in English law by rendering penal the treatment of venereal diseases by any one but a qualified physician. Formerly any quack or other person, however ignorant, could treat any disease with impunity. The only liability was that in case of death they might be tried for manslaughter, but, as a matter of fact, even in the case of Christian scientists who had undertaken to treat serious disease which proved fatal, no conviction has ever been obtained. In the present case a pharmacist and his assistant were prosecuted. The former advertised in the *Daily Telegraph* "prescription 606," which he described as a "bad blood tonic." In a pamphlet which he issued he wrote: "Even syphilis in most instances can be cured by the patient himself, provided he is told at the outset what remedy to take." His formula was stated to consist of potassium, mercury, sodium and iron iodids, sarsaparilla and other drugs. A police inspector went to his shop and asked if the "606" advertised was for venereal disease. He was told it was, and bought a box of tablets. The assistant told a police sergeant that his "606" was the best he could have and better than arsphenamin. The jury found both defendants guilty. The principal was sentenced to four months imprisonment and the assistant to six weeks. The judge said he took into consideration the fact that this was the first case of the kind in which a prosecution took place.

Tuberculosis Among Ex-Soldiers and Sailors

The interdepartmental committee appointed by the minister of health and the minister of pensions to consider the steps for the provision of residential treatment for discharged soldiers and sailors suffering from tuberculosis, and for their reintroduction into employment, especially on the land, has issued its report. The number of ex-service men invalidated out of the services on account of tuberculosis, or afterward found to be suffering from tuberculosis attributable to, or aggravated by, conditions of service, amounts to about 35,000. Of these, 22,000 have received or are receiving residential treatment, which has often been for far too short a period. The committee feels that the problem of the tuberculous ex-soldier or sailor is only one aspect of the national problem of dealing with tuberculosis. The best possible use should be made of all existing means of treatment, and then these means should be expanded and improved as rapidly as possible. The priority of treatment hitherto afforded to ex-service men should continue. There is serious shortage of accommodation in existing sanatoriums and hospitals for the treatment of tuberculosis. The number of beds in the United Kingdom is 19,500. If allowance be made for the number required for women and children, the number available for the male adult population is only about 10,000. The accommodation should be increased immediately. The question of using existing army hutments for the treatment of tuberculosis presents many difficulties. The hutments are not likely to provide satisfactory accommodation, but it is possible that the best army hospital huts, and others of similar construction, would make satisfactory sanatoriums, at any rate for temporary use. With regard to treatment, it should take place in three stages. First should come the sanatorium, next the colony where treatment is continued but where training is the main objective, and lastly the permanent village settlement, where permanent employment is afforded under medical supervision.

Rats as Carriers of Spirochaeta Icterohaemorrhagiae

Major A. G. R. Foulerton, officer in charge of the hygiene department of the Army Medical College and health officer for East Sussex, has presented a report to the city corporation of an investigation undertaken at their instance on the protozoal parasites of the rat, with special reference to spirochetal jaundice in man and the London rat as a natural reservoir of that disease. During the last four years, Japanese workers have shown that the rat is a carrier of the microbes of spirochetal jaundice and rat-bite fever, which, though harmless to the rat, is pathogenic to other

animals, including man. Rat carriers of the microbe of jaundice have been found not only in Japan but also in Algeria, America, Belgium, France and Tunis. Examination of 101 London rats caught showed that four were carriers of the spirochete of jaundice.

Physicians Increase Their Fees

Since the war the cost of living has increased more than 100 per cent. A certain increase of physicians' fees has naturally taken place, but it has not been universal or uniform. The British Medical Association thinks that 50 per cent. is the least that physicians' fees should be increased, considering not only the increased cost of living but also that of drugs, instruments and gasoline. Some time ago the association circularized local authorities asking that medical salaries should be increased by 33⅓ per cent. Panel physicians are at present receiving a bonus varying from 15 to 30 per cent., according to their total incomes.

The Influence of Alcohol on Manual Work

For the Medical Research Committee an investigation on the influence of alcohol on manual work and on neuromuscular coordination has been carried out by Dr. H. M. Vernon and Dr. Major Greenwood. The conclusions arrived at are as follows: Small doses of alcohol, well within the limits of what would be deemed by all moderation, do not sensibly affect the speed of performance of such semiautomatic operations as typing a memorized passage or setting down and adding a row of figures on a mechanical calculator, but gravely depreciate the accuracy of performance. Two glasses of port wine in a person accustomed to drink a glass of wine have this effect when the wine is taken with food. Less than this is sufficient to produce a result if taken on an empty stomach. Should the task set be very familiar to the subject, the foregoing conclusion does not hold. Such small doses of alcohol did not exert any measurable effect on the number of mistakes in either the typing or the adding test made with a speed of performance to which the subject had become familiarized by long practice. None of the experiments bring out any effect on the slow addings or typings, experiments which were made at a speed to which those experimented on were quite accustomed.

Peculiar Method of Suicide

An inquest was held in York on a woman, a physician and latterly a patient in a lunatic asylum. Last November the deceased told a visiting relative that she had attempted to kill herself and ought to be dead, since she had stuck a needle into her heart. The medical superintendent was informed, and found two apparently simple pin pricks below the left breast. The patient had been suffering from melancholia and grew very much better and her delusions left her. Nothing more was heard of the needles until recently, when, after a few days' illness the lady died. The necropsy disclosed one needle sticking through and a second one into the walls of the heart together with signs of acute inflammation.

Marriages

William Lacey Edmundson, Major, M. C., U. S. Army, Denver, to Miss Dorothy Peacock Hunnewell, at Wilmette, Ill., August 16.

Zénon Albert d'Amours to Miss Pauline Jaramillo, both of Las Vegas, N. M., at Trinidad, Colo., August 30.

Carl Henry Davis, Milwaukee, to Miss Elizabeth Greene Upham of Kilbourn, Wis., September 6.

Claude Goldwin Scruggs, Lenox, Ga., to Miss Annabelle Mills at Monticello, Fla., August 13.

James Alto Ward, Baltimore, to Miss Linda Belle Heacock of Birmingham, Ala., September 8.

Lawrence Delano Miller, Toledo, to Miss Elizabeth Hamby of Cleveland, August 28.

Harry Frey, Rock Island, Ill., to Miss Helen M. Somers of Grinnell, Iowa, September 2.

Henry J. DeHaan to Miss Fannie Haislip, both of East St. Louis, Ill., September 3.

Merton O. Arnold, Chicago, to Miss Urcell V. Senneff of Dixon, Ill., June 20.

Otto John Jirsa to Miss Blanche Rezanka, both of Chicago, recently.

Deaths

Benjamin Franklin Church, Redlands, Calif.; College of Physicians and Surgeons, Baltimore, 1888; aged 61; a member of the Medical Society of the State of California, and in 1917 chairman of the eye, ear, nose and throat section of the society; president of the San Bernardino County Medical Society in 1917-1918; once president of the Travis County and Kaufman County (Texas) medical societies, and president of the Los Angeles Academy of Medicine; a specialist in diseases of the eye, ear, nose and throat; formerly dean of the faculty and professor of ophthalmology and otology in the College of Physicians and Surgeons, Los Angeles; who had been under treatment in Los Angeles for mental troubles for eight months; leaped from the window of his physician's office, September 2, and was instantly killed.

Boswell P. Anderson ⊕ Colorado Springs, Colo.; University of Virginia, Charlottesville, 1868; Washington University Medical School, Baltimore, 1869; aged 72; a Confederate veteran; at one time president of the Colorado State Medical Society; for more than forty-five years physician and surgeon to the Colorado State Blind and Deaf Institute; president of the staff of St. Francis' Hospital, Colorado Springs; for ten years chief surgeon and thereafter consulting surgeon to the Colorado Midland Railroad; died at his home, August 25, from angina pectoris.

Joseph Manuel Elliot, New Orleans; Tulane University, New Orleans, 1889; aged 59; a member of the Louisiana State Medical Society; professor of clinical medicine in the New Orleans Post-Graduate School of Medicine; chief of staff of the department of internal medicine at Charity Hospital, New Orleans, and visiting physician to the hospital for twenty-five years; vice president of the City Bank and Trust Company, New Orleans; died at his home, August 30.

George Herbert Richards, Orange, N. J.; New York Homeopathic Medical College, New York City, 1885; aged 66; formerly president of the Orange board of health and of the board of education; a lieutenant in the Medical Reserve Corps of the Army, and discharged in December, 1917; president of the board of trustees of the Homeopathic Hospital of Essex County, N. J.; died at his home, September 9, from heart disease.

Walter Cheyne ⊕ Sumter, S. C.; College of Physicians and Surgeons in the City of New York, 1891; aged 51; a specialist in urology; secretary of the Sumter County Medical Society in 1916, and president in 1918; at one time secretary of the South Carolina Medical Association, and first president of the National Association of State Secretaries; one of the founders of Toumey Hospital, Sumter; died at his home, August 13, from cerebral hemorrhage.

John Anderson Johnston ⊕ **Capt., M. C., U. S. Army,** Manila, P. I.; University of Pennsylvania, Philadelphia, 1893; aged 46; a specialist in bacteriology; president of the Manila Medical Society of Sciences; died in the Department Hospital, Manila, August 1, from acute dilatation of the heart and chronic myocarditis following influenza.

George Robert Curran ⊕ Mankato, Minn.; University of Michigan, Ann Arbor, 1892; aged 56; local surgeon of the Chicago and Northwestern system; surgeon to St. Joseph's Hospital; formerly first lieutenant and assistant surgeon in the Second Minnesota Infantry; died at his home, September 1, from heart disease.

John H. Alexander, Greensburg, Ind.; Medical College of Ohio, Cincinnati, 1874; aged 90; a resident of Decatur County for sixty-one years; physician to the state Odd Fellow's Home for many years; also president and secretary of the Decatur County Board of Health; died at his home, September 4.

Josephine Elizabeth Smith ⊕ Chicago; Rush Medical College, 1917; an intern at Cook County Hospital until Feb. 28, 1919; who passed the examination of the National Board of Examiners in October, 1917; died in the Washington Boulevard Hospital, Chicago, August 5, from acute lymphatic leukemia.

William Watts, Toledo, Ohio; University of Michigan, Homeopathic Medical School, Ann Arbor, 1878; aged 65; formerly major and surgeon, Sixth Infantry, Ohio National

⊕ Indicates "Fellow" of the American Medical Association.

Guard; a member of the staff of the Toledo Hospital; acting coroner of Lucas County in 1917; died at his home, August 31.

Robert Aloysius Biechele, Wooster, Ohio; Western Reserve University, Cleveland, 1888; aged 52; once president of the Stark County (Ohio) Medical Society; president of the Citizen's National Bank and the Wooster Electric Company; died at his home, September 3, from angina pectoris.

George Ellsworth Paff, Chicago; Indiana University, Indianapolis, 1908; aged 35; formerly of Gary, Ind.; died in the Grace Lutheran Sanatorium for Tuberculosis, San Antonio, Texas, about August 20, from tuberculosis.

Charles D. Ricker ✠ **Capt., M. C., U. S. Army,** Fabens, Texas; Maryland Medical College, Baltimore, 1902; aged 43; died in the Walter Reed General Hospital, Tacoma Park, D. C., August 4, from myocarditis.

Samuel Wesley Rimmer ✠ San Saba, Texas; Kentucky School of Medicine, Louisville, 1890; aged 55; once president of the San Saba County Medical Society; died at his home, recently, from angina pectoris.

Herbert B. Perry, Benson, Ill.; Jenner Medical College, Chicago, 1896; aged 60; a member of the Illinois State Medical Society; died in Brokow Hospital, Bloomingtn, Ill., August 25, from nephritis.

Thomas Noel White, Spring Garden, Ala.; Medical College of Georgia, Augusta, 1860; aged 80; surgeon of the Nineteenth Alabama Cavalry, C. S. Army, during the Civil War; died at his home, August 23.

Edward Malcolm Bruce, Chicago; Hahnemann Medical College, Chicago, 1891; aged 58; professor of internal medicine in his alma mater; died at his home, September 8, from cerebral hemorrhage.

Cyril Wickfield Sager, Titusville, Pa.; American Medical College, Eclectic, St. Louis, 1885; Hahnemann Medical College, Philadelphia, 1894; aged 57; died on his farm at Beaverdam, Pa., August 24.

Lee Mason Barney, Elkhart, Ind.; Northwestern University Medical School, Chicago, 1889; aged 53; who had been blind since 1913; died at his home, September 4, from cerebral hemorrhage.

Abijah Marvin Allen, Adrian, Mich.; University of Michigan, Ann Arbor, 1861; aged 85; assistant surgeon of the Seventh Michigan Infantry during the Civil War; died suddenly, August 26.

William S. Stillé ✠ Parkersburg, W. Va. (license, West Virginia, act of 1881); aged 69; died at his home, August 26, from pneumonia, three weeks after an operation for the removal of gallstones.

Halton I. Jessup, Philadelphia; Hahnemann Medical College, Philadelphia, 1884; aged 57; a specialist in ophthalmology; died at his home, September 3, from pyelonephritis.

Martin F. Coomes, Louisville, Ky.; Louisville (Ky.) Medical College, 1873; aged 72; died in St. Joseph's Infirmary, Louisville, August 28, a short time after a surgical operation.

George L. B. Rounseville, Mattoon, Ill.; Bennett Medical College, Chicago, 1883; aged 74; died in Cook County Hospital, Chicago, August 15, from valvular heart disease.

Burrell Thomas Landers, Oklahoma City; American Medical College, Eclectic, St. Louis, 1890; aged 75; a practitioner for forty-two years; died at his home, August 29.

Frank H. Williams, Spring Lake Beach, N. J.; University of Pennsylvania, Philadelphia, 1874; aged 67; died at his home, August 29, from cerebral hemorrhage.

Frank L. Hoag, Elk Rapids, Mich.; Detroit College of Medicine and Surgery, 1892; aged 51; died in Chicago, September 8, from chronic interstitial nephritis.

Walter May Fitch, Chicago; Rush Medical College, 1885; aged 57; died at his summer home in Twin Lakes, Wis., September 11, from heart disease.

John Joseph Barth ✠ Chicago; Rush Medical College, 1914; aged 33; died in the Alexian Brothers Hospital, Chicago, August 29, from septicemia.

James Riggs Burkhart, Davenport, Iowa; Keokuk (Iowa) Medical College, 1898; aged 43; died at his home, September 8, from heart disease.

H. Walter Murlless ✠ Guilford, Conn.; Louisville (Ky.) Medical College, 1893; aged 50; died at his home, August 24, from sarcoma.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE LUCAS LABORATORIES' PRODUCTS

THE JOURNAL has received several inquiries about the products put out by the Lucas Laboratories, Incorported, of New York City. A typical inquiry is that received from Dr. F. A. Jewett of Brooklyn, who writes:

"The enclosed circular is sent out to the medical profession by Dr. William Lucas, 287 W. 70th St., New York. What do you know of this man and his methods?"

William H. Lucas was graduated by the Medical College of Ohio in 1895 and was licensed in 1897. He is not a member of his local medical society. The products put out by the Lucas Laboratories are for intravenous use, and their method of exploitation indicates that the concern is less interested in the science of therapeutics than it is in taking commercial advantage of the present fad for intravenous medication. THE JOURNAL has protested editorially against the unnecessary use of the intravenous administration of drugs, and the abuse of this method of drug-giving prompted the Council on Pharmacy and Chemistry recently to emphasize the danger of indiscriminate intravenous medication.

The products of the Lucas Laboratories, Inc., have not been examined either by the A. M. A. Chemical Laboratory or by the Council on Pharmacy and Chemistry. The composition of these products is essentially secret, which in itself should be sufficient to deter physicians from using them. Of course, in accordance with all the tenents of orthodox nostrum exploitation, "formulas" are furnished. Even the crude hieroglyphics that used to be palmed off on the medical profession by nostrum exploiters under the guise of "graphic formulas" are outdone by the Lucas Laboratories in publishing the alleged formulas of its preparations. If we, as physicians, knew more chemistry, the Lucas Laboratories would not find it profitable to publish such ineffable nonsense as that which characterizes their "literature." For instance:

"'Luvein' Arsans (Plain)" is said to be: "Di hypo sodio calcio phosphite hydroxy arseno mercuric iodide." The first part of this "formula" might stand for sodium and calcium hypophosphite. The remainder is meaningless except that it suggests (but does not insure) the presence of arsenic and mercury iodide.

"'Luvein' Arsans, Nos. 1, 2 and 3."—"Meta hydroxy iodide sodio arsano mercuric dimethyl benzo sodio arsenate, ai oxy sodio tartaria sulpho disheuyl hydrazin." Who can venture even a conjecture as to the possible significance of this?

"'Luvein' Creosophite."—"Ammonio hydroxy calcio sodio hypo-phosphite arsenous pentoxy iodide." While the name suggests creosote, the "formula" gives no hint of this. It might refer to hypophosphites of ammonium, calcium and sodium with iodide of arsenic. Whether arsenous (trivalent arsenic) or arsenic (pentavalent arsenic) iodide or both are intended, is a question.

"'Luvein' Hexacol."—"Hexa methylenepyro catechin mono methyl amino ether glycerite." By moving these syllables around like the old "fifteen puzzle" they can be arranged to represent hexamethylenamin and monomethyl-ether of pyrocatechin (or guaiacol), having the "glycerite" left over.

It is futile to discuss the therapeutic claims made for the various preparations put out by the Lucas Laboratories. One might as profitably discuss the therapeutic claims made for "Peruna" or "Paine's Celery Compound" for the exploitation of the latter products is on just as high a scientific plane as the exploitation of the "Luvein" nostrums. The proposition offered to physicians by the Lucas Laboratories, Inc., is an insult to the intelligence of the medical profession. Not that the products themselves are necessarily any worse or

any better than many others offered for intravenous use; the selling methods are more crude, that is all.

The facts are, we have entered a new cycle of nostrum development. The unscientific mixtures for oral administration that characterized so large and disreputable a part of the proprietary medicine business of the past two or three decades, are giving way to equally unscientific mixtures for intravenous use. The dangers of the older nostrums are accentuated in the newer by the added element of risk that is inseparable from intravenous therapy. Add to this the temptation to the physician in the way of more substantial fees which, legitimately enough, may be charged when intravenous administration is called for, and the menace of the new style nostrum becomes evident. THE JOURNAL can only reiterate the warning that intravenous therapy should be employed only when most positively indicated. Further, because of the danger that is inseparable from this method of drug administration, physicians should be doubly careful to see that products employed for intravenous use come from firms of unquestioned scientific standing.

CASE'S RHEUMATIC SPECIFIC

Last week THE JOURNAL recorded the issuance of a fraud order against Jesse A. Case of Brockton, Mass. On account of the false and fraudulent representations made by Case for his nostrum he was denied the use of the United States mails, Aug. 18, 1919. Very shortly thereafter Case made application for the revocation of the fraud order on the grounds that he had entirely discontinued his fraudulent mail-order nostrum business and was now engaged in an entirely different business of a legitimate character. In addition to his personal application, Case filed the following affidavit:

"I, Jesse A. Case, being first duly sworn, depose and say that the business heretofore conducted by me, (i. e.) the selling of a rheumatism treatment which the Fraud Order issued against me on August 22, 1919, was designed to suppress has been discontinued and will not be revived any time in the future and that any remittances hereafter received for said treatment will be returned to the sender."

The postal authorities have notified THE JOURNAL that as Case's fraudulent business no longer exists and Case has sworn that he will not revive it and will return to the senders any remittances that may come to him in the future for his "rheumatism cure" it is believed that the ends of justice will be met and satisfied by revoking the fraud order. The order has been revoked.

Correspondence

"DEATH FROM RHUBARB LEAVES DUE TO OXALIC ACID POISONING"

To the Editor:—The case of death after eating rhubarb leaves (THE JOURNAL, Aug. 23, 1919, p. 627) deserves, I think, some further discussion. It seems to be established that oxalic acid is one of the most active of the acids. It is generally stated in the textbooks that, unlike the other corrosive acids, such mild alkalis as potassium acid carbonate (saleratus) or sodium acid carbonate (baking soda) cannot be used as antidotes, as the oxalates of these metals are almost as poisonous as the free acid. They are, however, not likely to be as corrosive. Oxalic acid is apparently a very frequent product of both animal and vegetable metabolism. It is almost always found in the form of an oxalate, generally calcium oxalate. This is an almost constant constituent of urinary sediments, and very frequent in leaf and root tissues. In the latter it generally occurs as bundles of fine needles in special cells. The corm of the Indian turnip of our forests (*Arisaema triphyllum* (L.) Torr.) contains a large amount of these crystals, and the extremely irritating property of the corm is due to their mechanical action.

There is no likelihood that calcium oxalate will act as a specific poison. It is highly insoluble in water, and even in many dilute acids. The standard antidote has been lime. "Scrape the ceiling with a fire-shovel in an emergency" has been for more than half a century a classic in toxicology. I am inclined to the opinion that in the cases of poisoning by rhubarb leaves which have lately been reported, including the case in THE JOURNAL, the mechanical action of the calcium oxalate is the cause. The patient suffered an abortion, and it is worth while to inquire whether this was not brought about by the irritation of the pelvic viscera by the crystals. It is not likely that the feebly acid gastric juice would be able to dissolve this material.

The original article from which the abstract in *Chemical Abstracts* (**11**:2374, 1917) is printed (quoted by THE JOURNAL in the bibliography) is not accessible to me, but the process is given in the abstract, and it consists first in heating the vegetable matter with strong hydrochloric acid, which dissolves all the oxalates. The calculation is made to pure oxalic acid, but there is, of course, no reason to believe that this exists as such in any plant. When plant structures have a distinct sour taste, as in the case of species of *Oxalis*, it is generally assumed that potassium acid oxalate is present. The figures in the article to which you call attention give for rhubarb 3.2 gm. per thousand of material as prepared for cooking. Now 1,000 gm. are more than 2 avoirdupois pounds, and this amount would according to the analysis yield about 50 grains of oxalic acid, but, as I have remarked above, much of this is probably in the form of calcium oxalate. The standard authorities give the fatal dose of oxalic acid as rather large, from 50 to 60 grains; and even supposing that the whole of the oxalic content of the rhubarb leaf was the free acid, about 2 pounds of it would be required to furnish a poisonous dose.

I am inclined to think, therefore, that the mechanical irritation of the insoluble sharp crystals is the cause of the death.

HENRY LEFFMANN, M.D., Philadelphia.

[COMMENT.—There is ample evidence opposing the mechanistic theory of our correspondent. Most of the cases of poisoning recorded followed the eating of rhubarb stems, but a number have resulted from eating the leaves. Fortunately, most of the victims recovered. The reports of the fatal cases show that there were violent vomiting and diarrhea followed by coma and death. Epistaxis with noncoagulability of the blood has been observed, and an abortion before death reported. The symptoms (especially the noncoagulability of the blood) are such as would be expected from the ingestion of moderate quantities of oxalic acid or soluble oxalates, by those having an allergic manifestation toward oxalic acid.

In the case which has been best studied (Poisoning by Rhubarb Leaves, *Lancet* **1**:847 [June 2] 1917; *Pharm. J.* **98**:413 [May 12] 1917; THE JOURNAL, June 23, 1917, p. 1928; June 30, 1917, p. 1954), oxalic acid was detected in the internal organs, but no evidence was presented to show the presence of calcium oxalate crystals or other mechanical irritant in the viscera. The physician who made the necropsy attributed the death to coma consequent on oxalic acid poisoning. The chemist who examined the internal organs of the deceased also analyzed rhubarb leaves from the same field as those eaten by the victim and found about 10 grains each of potassium oxalate and calcium oxalate to the pound. Van Itallie and Lemkes believe that the toxic dose of potassium oxalate, usually stated at from 30 to 75 grains, is actually much less. If this is true, the contention that the amount ingested in the case recently reported was not sufficient to cause death is much weakened. Our correspondent thinks it unlikely that the feebly acid gastric juice would be able to dissolve calcium oxalate (an inert substance), thus transforming it into soluble oxalates (poisonous substances). In the A. M. A. laboratory, 1 gm. of calcium oxalate was treated with 500 c.c. of 0.2 per cent. hydrochloric acid at the laboratory temperature for four hours. About 0.2 gm., or 20 per cent., was rendered soluble. Doubtless the amount would be greater at the temperature of the body.

The acridity of the Indian turnip and some other plants is due to the mechanical action of calcium oxalate crystals. The irritating properties are destroyed by cooking. Wiley believes that the calcium oxalate crystals are dissolved in the cooking process but, since the acidity of the Indian turnip is low, it is more probable that the heat destroys the crystalline structure of the raphides by depriving them of their water of hydration. In the cases of rhubarb poisoning it is

clear that the stems and leaves which had been eaten were cooked. It is reasonable to suppose that the same effect on the oxalates might be obtained by cooking rhubarb as by cooking the Indian turnip. Further, there is no evidence that crystals of calcium oxalate have been detected either in the vomitus or internal organs of the poisoned victims, or in the cooked rhubarb which they had eaten. Until this evidence is forthcoming, the theory of mechanical irritation must rest in the domain of the unproved.—ED.]

NECROPSIES AT BELLEVUE HOSPITAL

To the Editor:—I have read with interest Dr. Francis Carter Wood's article on "The Relation of Pathology to Medicine" (THE JOURNAL, Aug. 23, 1919, p. 569). I may be pardoned for having focused attention on that passage which inquires: "If the Mayo Clinic and the General Memorial Hospital of New York succeed in obtaining a permit [for necropsy] in over 90 per cent. of deaths, why does Bellevue Hospital obtain only 7 per cent. and many other institutions only from 20 to 30?"

As far as Bellevue Hospital is concerned, the interrogation is misleading, without design on Dr. Wood's part, of course. I have investigated the necropsy figures of Bellevue Hospital covering the past seven years and I find that, with the exception of the chaotic period of 1918, when the percentage fell to 7.6, and the year 1915, when it dropped to 14 without any cause now recallable, our necropsies obtained by consent vary between 25.4 and 36 per cent. of the total number of deaths, excluding from the computation, of course, those cases which fall under the jurisdiction of the chief medical examiner's office—with these we neither dare nor care to meddle—and the unclaimed dead—with these we have nothing to do since, when an individual dies in Bellevue Hospital and is without friends or relatives, the unclaimed body passes thence to the custodianship of the commissioner of public charities, who now exercises full authority over its disposal—whether it is to be given to the anatomic board for scholastic purposes or buried in Potter's Field without dissection. In these two ways between 1,200 and 1,500 bodies every year automatically pass beyond all possible control of the hospital authorities at the very instant that death occurs.

I should also like to point out that in Bellevue Hospital the average total number of deaths yearly is 3,546, while in the Mayo Clinic the average is about 254, and in the General Memorial Hospital it is lower still, so that it is scarcely fair to compare the necropsy statistics of the two smaller institutions with those of the second largest general hospital in the Western Hemisphere. Compared, however, with the Boston City Hospital—the only really large American institution whose necropsy figures are available to me—the Bellevue record is indeed creditable, the Boston institution, with an average yearly death rate of 1,830, securing only about 7 per cent. of necropsies.

In Bellevue Hospital there are two outstanding obstacles to the securing of consent for necropsy, namely, the ignorance and prejudice of relatives or their inaccessibility, and the interdiction of the Jewish religion. In fact, these two obstacles unite to render it impossible to secure permission for postmortem examination in no small proportion of deaths; and yet, in spite of these formidable impediments, Bellevue Hospital secures by consent an average of about 400 necropsies yearly. All of them are performed by the accredited pathologists of the institution. Moreover, a large part of the work of the medical examiner's office and of the medical assistant to the district attorney of the county of New York is carried out in the postmortem rooms of Bellevue Hospital. Attendance on every necropsy thus performed is open to our visiting and resident staff. The total number of necropsies from these two sources seldom, if ever, falls below 1,200 a year, at least 30 per cent. of the number coming from the wards of Bellevue Hospital. In short, the student of pathologic anatomy can see as much postmortem material, perhaps more, within the walls of Bellevue Hospital than in any other institution in the English speaking world, embracing not only the average run of cases, but also an extraordinarily wide range of material representing the pathology of crime and violence.

Although at Bellevue Hospital we are by no means satisfied with our work in pathology, we nevertheless feel that not only is the hospital doing its share to keep alive an interest in pathologic anatomy, without which there is no intelligent medicine, but also the institution is playing no mean part in the development of the newly organized institute of legal medicine of which the city of New York has reason to be proud and for which it should be thankful.

DOUGLAS SYMMERS, M.D., New York.
Director of Laboratories, Bellevue and Allied Hospitals.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WAR RISK INSURANCE

To the Editor:—I am at present an officer in the Medical Reserve of the U. S. Army. My hospital internship was incomplete at the time of the armistice. Consequently I have not been called to active service. Is it possible for me now to take out the Army insurance policy which was granted to all officers and men on active service, and at the same rates? If so, can you give me any information as to how to proceed to do so? I shall appreciate anything you may do for me by way of advice in this matter.

J. R. SCOTT, M.D., Kerhonkson, N. Y.

ANSWER.—The War Risk Insurance Act provides that insurance shall be granted to every commissioned officer and enlisted man and to every member of the Army Nurse Corps (female) and of the Navy Nurse Corps (female) when employed in active service under the War Department or Navy Department, upon application to the Bureau and without medical examination. It further provides that such insurance must be applied for within 120 days after enlistment or after entrance into or employment in the active service and before discharge or resignation. As the inquirer was never in the active service, he is not entitled to war risk insurance. Even if he was at one time in the active service, he cannot now, after separation from active service, take out a war risk policy.

INTRAVENOUS USE OF ANTIMONY TARTRATE

To the Editor:—In THE JOURNAL, Aug. 23, 1919, p. 645, I find an abstract of an article entitled "Bilharziasis Treated by Intravenous Injection of Antimony Tartrate," which appeared in the *Journal of Tropical Medicine and Hygiene*. Please inform me whether the authors give in this article the composition and the method of preparation of the solution of Antimony Tartrate used, and also give such facts concerning the technic, as amount administered, interval between injections, and occurrence of reactions.

L. A. KENNELL, M.D., Philadelphia.
Lieutenant, M. C., U. S. Navy.

ANSWER.—The apparatus in use at the Khartoum Civil Hospital for the intravenous injection of antimony tartrate, both for bilharziasis and also for leishmaniasis, is as follows: 1. Two small 50 c.c. Bohemian flasks one containing a sterilized solution of antimony tartrate (antimony and potassium tartrate, U. S. P.), ½ grain to 20 minims of distilled water (20 grains to the ounce), the other containing a sterilized solution of physiologic sodium chlorid solution for dilution purposes, each labeled with their respective contents. 2. Two record syringes (glass with metal plungers), a small one of 20 minims, and a large one of 10 c.c. The same size needles are used for both syringes; they should be fine (hypodermic) and sharp with platinum iridium tips (a fine sharp needle is a very important requisite). 3. A small sterilizer, two or three small beakers, crucibles and watch glasses should be ready for holding and mixing solutions, and for containing the solution of antimony and the physiologic sodium chlorid solution ready for use. With a skilful assistant to compress the veins, a tourniquet is unnecessary. A prominent vein of the arm is chosen, preferably not the median basilic at the elbow as it is in relation to the brachial artery; any prominent vein, however, will do; sometimes a vein at the back of the hand is conveniently conspicuous when others are not. This small operation should

be done with much care. It is absolutely necessary to inject the antimony tartrate solution inside the lumen of the vein, or phlebitis and necrosis result. The skin is sterilized with ether or alcohol; iodin may be used, but it has a tendency to obscure the veins on dark skins. Treatment commences with the injection of ½ grain in about 40 or 50 minims of physiologic sodium chlorid solution. Injections take place every other day, equal parts of the antimony solution and the physiologic sodium chlorid solution being used when larger doses are reached. The dose is increased by ½ grain every injection until 2 or 2½ grains have been reached, and this is maintained (in the case of boys of 16 or under, 1½ grains is the maximum dose employed). The total quantity of antimony injected would be 20 or 25 grains, according to circumstances. If more than 25 grains are required, the surplus needed should be reserved for a second course. When the dose of antimony tartrate is 1½ grains or 2 grains (sometimes before), a cough immediately on injecting indicates that the antimony is already in the pulmonary circulation, and shows that the drug is both rapid and far reaching in its action.

BIOGRAPHIC NOTES ON FUCHS, TSCHERNING AND LANDOLT—THE ORIGIN OF SPECTACLES

To the Editor:—1. I require some biographic notes about Dr. Ernst Fuchs of Vienna and Drs. H. M. E. Tscherning and Edmond L. Landolt of Paris. As it is impossible to find much about European celebrities in works of reference after 1914, I would appreciate any information you can give me about these men. What I particularly wish to know is whether they are still living, and what professional positions they now occupy.

2. I have a recollection of having read somewhere in recent years of excavation in Greece, Rome or Egypt of spectacle frames, or some other indication that the ancient peoples were acquainted with the use of eyeglasses. Can you supply me with the reference

W. H. BATES, M.D., New York.

ANSWER.—1. No information regarding any of these men is available since 1916; but it is not likely that any of them have died since they are all of sufficient note to have received general mention regardless of the war. The following data are available concerning the last positions which they have occupied:

Fuchs.—The "Biographisches Lexikon" for the year 1901 lists Fuchs as follows: "Fuchs, Ernst, zu Wien. geb. daselbst June 14, 1851. studierte . . . war 1876 bis 80 Assistent bei Arlt. 1880 bis 85 Prof. der Augenheilk. in Lüttich, und ist seit 1885 Prof. der Augenheilk. (als von Jaeger's Nachfolger). Litterar. Arbeiten . . . Lehrbuch der Augenheilkunde (bis jezt in 7 Aufgabe erschienen and in 6 Sprachen übersetzt)." He retired in 1915.

Tscherning.—The "Annuaire médical" lists: "Tscherning, 1887. Directeur du laboratoire d'ophthalmologie à la Sorbonne, oculiste de l'Institution nationale des Sourds-Muets (maladies des yeux) de 1 h. à 3 h. mardi, samedi, rue du Mézières 15."

Landolt.—"(Edmond) Zurich, 1869. Paris, 1874. O. medecin-oculiste consultant à l'Institution nationale des jeunes aveugles. Clinique des maladies des yeux, tous les jours de midi à 2 h. St. André des Arts, 27 excepté le samedi, rue Volney 4."

2. We know of no recent excavations of spectacle frames. There are historical data, however, for the statement that lenses were used by old persons to distinguish small print in China and in Europe in the thirteenth century, from 1260 to 1367 A. D. These medieval glasses are said to have come from Turkestan, and historians are inclined to believe that they reached Turkestan from India, where they existed at the end of the twelfth or the beginning of the thirteenth century. On a tombstone in a Florentine church appears the inscription: "Here lies Salvino d' Armati of Florence, the inventor of spectacles. God forgive him his sins. Died in the year of our Lord 1317." Armati is credited with the discovery of glasses in 1285. The American Encyclopedia of Ophthalmology, **7**:4898, thus summarizes the history of lenses: "The inventor of glasses is unknown; the nations of antiquity probably knew nothing of these instruments. . . . Near the end of the thirteenth century convex-spherical lenses came into use in China and in Europe. It is probable that neither obtained their knowledge directly from the other." The earliest known pairs of spectacles consisting of two large circular lenses, connected by a nose-bridge, known to have been the property of the Renaissance humanist Willibald Pirkheimer (1470-1530), are on exhibition in Nuremburg museum.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 7. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.
CALIFORNIA: Sacramento, Oct. 20-23. Sec., Dr. Chas. B. Pinkham, Butler Bldg., San Francisco.
COLORADO: Denver, Oct. 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, Oct. 14-16. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
GEORGIA: Atlanta, Oct. 14-15. Sec., Dr. C. T. Nolan, Marietta.
IDAHO: Boise, Oct. 7. Hon. Robt. O. Jones, Commissioner of Law Enforcement, Boise.
ILLINOIS: Chicago, Sept. 22-25. Sec., Mr. Francis W. Shepardson, Capitol Bldg., Springfield.
KANSAS: Topeka, Oct. 14. Sec., Dr. H. A. Dykes, Lebanon.
LOUISIANA: New Orleans, Nov. 4. Sec., Homeo. Bd., Dr. F. H. Hardenstein, 702 Machesa Bldg., New Orleans.
MICHIGAN: Lansing, Oct. 14-16. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 7-9. Sec., Dr. Thos. McDavitt, 741 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Oct. 7-9. Sec., Dr. Geo. H. Jones, State House, Jefferson City.
MONTANA: Helena, Oct. 7. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEVADA: Carson City, Nov. 3. Sec., Dr. S. L. Lee, Carson City.
NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. Alexander MacAlister, State House, Trenton.
NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. R. E. McBride, Las Cruces.
OKLAHOMA: Oklahoma City, Oct. 7-8. Sec., Dr. J. J. Williams, Weatherford.
RHODE ISLAND: Providence, Oct. 2-3. Sec., Dr. B. U. Richards, State House, Providence.
UTAH: Salt Lake City, Oct. 6-7. Sec., Dr. G. F. Harding, Templeton Bldg., Salt Lake City.
WEST VIRGINIA: Charleston, Oct. 14. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.
WYOMING: Cheyenne, Oct. 6-8. Sec., Dr. J. D. Shingle, Cheyenne.

AMERICAN CONFERENCE ON HOSPITAL SERVICE

The first regular meeting of the American Hospital Conference, which was organized in Chicago, April 21, 1919,[1] for the purpose of establishing a closer affiliation of all organizations interested in the betterment of hospital service, was held at Cincinnati, September 9-12, in connection with the annual meeting of the American Hospital Association. A constitution and by-laws were adopted in which the name of the organization was changed from the American Hospital Conference to the American Conference on Hospital Service.

The organization is composed of two accredited delegates from each of the following fifteen organizations:

American Association of Industrial Physicians and Surgeons.
American Association of Hospital Social Service Workers.
American College of Surgeons.
American Hospital Association.
American Medical Association.
American Nurses Association
Association of American Medical Colleges.
Catholic Hospital Association of the United States and Canada.
Federation of State Medical Boards of the United States.
International Compensation Board.
Medical Department of the United States Army.
Medical Department of the United States Navy.
National League of Nursing Education.
National Organization for Public Health Nursing.
United States Public Health Service.

Provision is also made for the appointment of honorary delegates who have the privilege of the floor and may serve on committees but are not entitled to vote or to hold office. The organization will be controlled by a board of eleven trustees, including the president and treasurer; the other nine were elected for terms of one, two and three years so that three vacancies will occur each year.

The office of president and that of executive secretary for the present have been left vacant, the trustees being empowered to fill these positions from the best talent available. In the election of officers, Dr. A. R. Warner, superintendent of Lakeside Hospital, Cleveland, was made first vice president;

1. See Report of the Council on Medical Education, J. A. M. A. **72**: 1757 (June 14) 1919.

Miss Clara D. Noyes, president of the American Nurses' Association, second vice president, and Dr. Harry E. Mock, president of the American Association of Industrial Physicians and Surgeons, was elected treasurer. Nine trustees were elected, three each for terms, respectively, of three years, two years and one year. Those for the three year term were Dr. S. S. Goldwater, director of Mount Sinai Hospital, New York; Dr. John M. Dodson, dean of Rush Medical College, Chicago, and Mr. John G. Bowman, director of the American College of Surgeons, Chicago. For the two year term those elected were Father Charles B. Moulinier, president of the Catholic Hospital Association, Milwaukee; Miss Edna G. Henry, president of the American Association of Hospital Social Workers, Indianapolis, and Dr. Roger Morris, professor of medicine at the University of Cincinnati. For the one year term those elected were Col. James D. Glennan of the Medical Department of the United States Army; Senior Surgeon J. H. White of the United States Public Health Service, and Dr. David A. Strickler, president of the Federation of State Medical Boards of the United States, Denver. The next meeting will be held in Chicago during the first week in March following the Sixteenth Annual Conference of the Council on Medical Education.

Delaware June Examination

Dr. H. W. Briggs, secretary of the Delaware State Board of Medical Examiners, reports the written and practical examination held at Wilmington, June 17-19, 1919. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 10 candidates examined, 9 passed and 1 failed. Six candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Maryland		(1919)	76.8
University of Nebraska		(1919)	82.3, 87.3
New York Homeo. Med. Coll. and Flower Hosp.		(1918)	88.6
Jefferson Medical College		(1919)	86.6
Medico-Chirurgical College of Philadelphia		(1915)	89
University of Pennsylvania	(1917) 84.8,	(1918)	80.8
University of Virginia		(1918)	81.5
	FAILED		
Temple University		(1918)	71.8

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Jefferson Medical College	(1912) Pennsylvania,	(1913)	Vermont
Medico-Chirurgical Coll. of Philadelphia	(1901,	(1913)	Penna.
University of Pennsylvania	(1915),	(1918)	New York

Michigan June Examination

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Ann Arbor, June 10-12, 1919. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Twelve candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Michigan Homeopathic Medical School		(1896)	82.3.
	(1919) 84.6, 84.6, 85, 86.4, 86.9, 87, 87.5, 94.7.		
University of Michigan Medical School	(1918) 83.6,	(1919)	85.9
University of Pennsylvania		(1919)	82.9

Vermont June Examination

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written and practical examination held at Burlington, June 26-28, 1919. The examination covered 12 subjects and included 90 questions. An average of 75 per cent. was required to pass. Nineteen candidates were examined, all of whom passed. One candidate was licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Loyola University, Chicago		(1918)	80.8
University of Vermont	(1915) 87.8, (1918) 84.2, (1919) 79.8, 80.3, 81.9, 82.2, 85, 85.1, 85.3, 85.5, 86, 86.2, 86.4, 86.5, 86.6, 88.1, 89, 90.1.		

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Baltimore Medical College		(1906)	New Hamp.

Book Notices

TRAINING SCHOOL METHODS FOR INSTITUTIONAL NURSES. By Charlotte A. Aikens. Cloth. Price, $2.25 net. Pp. 337, with illustrations. Philadelphia: W. B. Saunders Company, 1919.

This book especially emphasizes the importance of common sense methods, and of golden rule standards in the management of schools for nurses. The first section of the book takes up the task of the training school, the pupil, the teacher, the course of study, principles and methods of teaching. While not minimizing the importance of proper educational standards, it points out the danger of losing sight of service to the sick in the ever increasing demands of the training school curriculum. Good moral character, intelligence and broad human sympathy are primary requisites in the candidate for training. The author urges the importance of clear, definite, painstaking, practical instruction at the very beginning of the course. She considers the junior year the time of greatest importance in the life of the student—the time when methods of study, of thought and of work are being formulated; the time when new ideals and visions of service should inspire to lives of usefulness. The choice of teachers and methods of teaching are treated in a very helpful and suggestive manner. The second section of the book deals with the head nurse, her duties and responsibilities, and her relation to the patient, to his relatives, to the student nurse, to the staff and to the institution. Bedside teaching, ward housekeeping, general management, records and orders are all carefully and systematically treated. One chapter each is devoted to the duties and responsibilities of the chief surgical nurse and to the night supervisor. To the instructor of nurses, to the head nurse or supervisor of nurses the author brings much of inspiration as well as a broad fund of knowledge gained from many years of experience as a teacher of nurses and as a hospital executive.

FIRST LESSONS IN BACTERIOLOGY FOR NURSES. By M. E. Morse, M.D., Pathologist to the Boston State Hospital. Cloth. Price, $1.25 net. Pp. 139, with 30 illustrations. Philadelphia: W. B. Saunders Company, 1919.

This is a practical discussion of one of the most important of the branches of medicine of which the nurse should have a clear understanding. Having a practical knowledge of bacteriology, she is able to understand why she does certain things and the importance of doing them well. The author has succeeded in avoiding unnecessarily technical language and in presenting the subject in such elementary terms as to make it possible for the average nurse to get a good fundamental knowledge of what bacteria are, how they grow and what they do. Separate chapters are devoted to the bacteriology of special diseases, as tuberculosis, pneumonia, typhoid fever, measles, scarlet fever, whooping cough and venereal diseases. In separate chapters are discussed immunity, vaccines, serums, etc. While elementary and written especially for nurses, physicians who realize that they are becoming "rusty" will find this little book helpful as a first step in "brushing up."

CLINICAL CASE-TAKING: AN INTRODUCTION OF ELEMENTARY CLINICAL MEDICINE. By Robert D. Keith, M.A., M.D., Consulting Physician, Tan Tock Seng's Hospital, Singapore. Cloth. Price, $1.50 net. Pp. 104. New York: Paul B. Hoeber, 1919.

This is a little volume of about ninety pages. While intended primarily as a guide for students in the taking of case histories, it is in effect a small compend of physical diagnosis, and as such fulfils its purpose admirably. The student is taught how to take complete histories, special attention being paid to the present complaint, the technic of examination, and to a certain extent how to interpret the results. A few of the commonly used laboratory methods are also given. We believe that the technic of taking diastolic pressure should be included, and that attention should be drawn to the value of the pulmonary excursion. The intern just entering on his medical service, and the student, should alike profit by the valuable suggestions made by the author.

Social Medicine, Medical Economics and Miscellany

EFFECT OF THE HIGH COST OF LIVING ON PUBLIC HEALTH

The effect of the high cost of living on health was investigated by the department of health of the city of New York (Harris, L. I.: Some Medical Aspects of the High Cost of Living, *Am. J. Pub. Health* **9**:491 [July] 1919) just prior to the outbreak of the epidemic of influenza in 1918. What foods working people do without when prices are high, how many women and children are forced into labor by the high cost of living, and how much their nutrition is reduced were queries to which the investigation sought answers. It was instituted on the assumption that "an adequate income plays a greater rôle in the maintenance of public health than any other single factor." Public health nurses gathered detailed information relative to 2,084 families, representing, in income and nationality, a typical cross-section of the population of New York. Twenty-one per cent. had a total annual income of $600 or less; 51 per cent., of $900 or less, half that declared necessary for a family of five by the U. S. Commission of Labor, in 1918. In 9.8 per cent. of the homes, the housewife had been compelled to enter industry; 9.1 had had, for the first time, to seek charitable aid. It was found that as effects of the low economic status boarders are taken in, overcrowding the homes; fatigued mothers are prevented from giving proper maternal and nursing care to the children and the sick members of the family, on their return, at night, from a day's arduous labor; illness is augmented, because special treatment, nursing care, and freedom from work and worry cannot be had, and recovery is retarded for the same reasons, and because essential, nourishing foods are unobtainable. A delayed recovery results in an added loss of time from work, and, therefore, in a progressive increase of bad conditions. The high cost of living forced a large proportion of families to dispense with such foods as meat, eggs, butter, milk and sugar, foods of a class particularly needed in the treatment of such diseases as tuberculosis. The condition bore heavily on children. In 296 families, milk was entirely eliminated from the children's dietary, and, in seventy-one, very considerably reduced. Butter was eliminated in 370 and reduced in 191; meat, eliminated in 544 and reduced in 238. Much more marked eliminations and reductions of these nourishing foods were practiced among the adult members of the families. In 628 families, the high cost of living had a pronounced effect on the quality and the amount of clothing which they were able to purchase, and, in 507, accustomed forms of recreation had been largely dispensed with. In 287 cases, the high cost of living retarded recovery from illness, and cost a loss of working time, valued at $41,395, in 285. "The industrial worker," it is concluded in the report, "should receive adequate wages in proportion to the cost of the necessities of life, lacking which, not charity but a pension from the community in whose behalf he has labored" should be given.

VENEREAL DISEASE PROPHYLAXIS

Early in 1919, an interdepartmental committee was appointed in Great Britain to consider what measures should be taken to mitigate the dangers of the dissemination of tropical and other diseases among the civil population during the demobilization of troops. A note on prophylaxis against venereal diseases has just been issued in the form of a report to the minister of health. In analyzing this report the British *Chemist and Druggist* says: "A good many witnesses appear to have been examined and various statistics were before the committee as to the effect of prophylaxis after exposure to venereal diseases. In regard to the general experience of prophylactics distributed before exposure to infection, as prevailing in the various services, the committee came to the conclusion (1) that certain drugs, if properly applied, are efficacious in preventing venereal disease; (2) that if these drugs are not properly or skilfully applied their efficacy cannot be relied on; (3) that the issue of prophylactic 'packets' tend to give rise to a false sense of security, and thus to encourage the taking of risks which would not be otherwise incurred and the neglect of facilities for early treatment when available, and in certain cases might even increase the spread of disease; (4) that, in spite of the most careful instruction, the grant or issue of 'packets' results in many an individual using them for self-treatment after he finds himself infected; (5) that, where preventive treatment is provided by a skilled attendant after exposure to infection, the results are better than when the same measures are taken by the individual affected, even after the most careful instruction; (6) that the excessive consumption of alcoholic liquors not only diminishes the sense of responsibility, but also tends to prevent the proper use of prophylactics and to delay the individual's application for skilled treatment; (7) that the most carefully organized 'packet' system, such as exists now in the army (a system which would be unattainable in the civil community), has not produced such a general reduction in the incidence of venereal disease as to counteract the disadvantages mentioned in these conclusions; (8) that the organization of recreation and social amenities has assisted in the reduction of the incidence of venereal diseases in the services before the war, and has also assisted in preventing that increase in the incidence of these diseases which, from past experience, might have been anticipated during the war; and (9) that energy should not be dissipated on measures of doubtful value, but concentrated rather on wise propaganda and the provision of early, prompt and skilled treatment, in order to diminish the prevalence of these diseases. It should be recognized that failure to cure these diseases is one of the main causes of their prevalence, and that failure to cure, in the most skilled hands, results largely from failure to treat them in their early stages. The general conclusion is that there has not been sufficient evidence of the beneficial results gained by the distribution of phrophylactic packets to prove the value of the system or to justify recommending its official encouragement among the civil population."

SANITATION IN THE TROPICS

When the term "tropical sanitation" is used in this country, one is likely to think of the work accomplished by army medical officers in Havana, the Canal Zone, Porto Rico, etc. A very different picture of the problems which Latin American countries have to face in their efforts to improve sanitary conditions, is given in the book which the veteran medical journalist of Peru, Dr. C. E. Paz Soldán, has recently published (Las Bases médico-sociales de la legislación sanitaria del Perú, Biblioteca de la Reforma Médica, Lima, 1918). Dr. Paz Soldán reviews the progress of sanitary legislation in his country from the colonial times when plagues were considered punishments inflicted by Providence, and public prayers the only weapons with which the people defended themselves. The picture he outlines of present sanitary conditions is rather lugubrious. In his opinion the most difficult handicap in Peru is that due to race distribution. In contrast with Argentina, Uruguay and Brazil, which have a relatively large population belonging to the Caucasian race, Peru has in its territory a larger percentage of Indians than any other South American nation, forming four fifths of the whole population. In addition, other non-Caucasian elements have been added, among them being the African negro and more recently Chinese and the Japanese. On the Spanish element, which is the basic element of the white population, there have been superimposed of late Italians, Englishmen, Frenchmen, Slavs and Turks. In spite of immigration, however, a decrease of population has been taking place to such an extreme that in the author's opinion Peru is a country without people. In addition to ethnical considerations, physical conditions complicate the situation, since the great mountain range of the Andes divides the country into three different sections, each one of which has entirely different problems. Acute as the public health problem is in the rural sections where people live in inadequate dwellings under

insanitary conditions, it is just as pressing in Peruvian towns, which in general and with one possible exception, Lima, lack safe water supplies and modern systems of garbage and sewage disposal. The descriptions of the way people are lodged are depressing, indeed. As typical of conditions in one of the ports with the largest commerce, he quotes from a city physician's report the following :

> In small rooms built of dirt, dung and straw; under roofs covered with reeds and dirt; with few if any windows, you will find the worst possible congestion of all kinds of people and animals: dogs of all breeds, rabbits, chickens, ducks and the never to be missed donkey with its old and odorous equipment which the family use for bedclothes.

As can be expected, all sorts of epidemic diseases prevail in Peru. While no exact figures are available since the sanitary services are not organized, it is known that smallpox never ceases its ravages, especially in the interior of the country. Tuberculosis is present all over the country, receiving each year new impulse from the discharge of tuberculous soldiers from the army. Next to smallpox, which is estimated to cause from 15,000 to 20,000 deaths annually, typhus fever is probably the most serious disease, causing annually thousands of deaths, especially among the Indians of the *punas*. But likewise plague, leprosy, typhoid, hookworm, malaria and practically every other tropical disease is undermining the national vitality. In concluding, Dr. Paz Soldán says that probably all these evils are the work of the past; and at this moment when humanity is looking toward the future, it may be expected that the dawn of a new epoch is about to appear. The first step in the new road to be traveled must, of course, consist in the enactment of adequate sanitary legislation, and it is on this point that the author insists in his timely essay.

ANOTHER DECISION ON THE HARRISON LAW

The commissioner of internal revenue, July 12, issued a decision based on the United States circuit court of appeals in the case of *Thompson* v. *the United States,* which came up on a writ of error from the United States district court for eastern Missouri. The court held that the Harrison law, being a revenue measure, is not an unconstitutional invasion of the police power reserved to the states. Regarding expert testimony by physicians as to the manner of treating drug addicts, the court held it proper to permit physicians to testify as experts as to well recognized methods of treating drug addicts, to show that the dispensing of narcotics, in the case in question, was not done in a legitimate manner. The expert testimony in this case was that, unless confined so that he cannot secure a supply of drugs secretly a drug addict cannot be cured. The court held that this testimony was properly admitted. The court further held that although enacted under the taxing power of Congress, it is to prevent the growing use of narcotics, which Congress regarded as a menace to the nation, and that the act has a moral end as well as being a revenue measure.

In regard to the sale of drugs by physicians, the court held that the exemption of a physician "in the course of his professional practice only" from the requirement that narcotics shall be dispensed on an official order form does not justify a physician in selling narcotics if he does not do so in good faith for the purpose of securing the relief of one suffering from an illness or to cure him from the morphin habit. The exception in the law must be construed strictly, and those who claim the benefit of any such exception must establish it as being clearly within the words as well as within the reason thereof. This means that the burden of proof of good faith lies on the physician accused of violating the law. The court also holds that in cases in which physicians furnish narcotics to addicts in decreasing quantities and claim to be curing the addict, the physician must be in personal attendance or must give the addict such personal attention as is sufficient to show that he is acting in good faith. The evidence showed that the defendant in this case was sending drug addicts morphin by mail or express without personal attendance on them, reducing the amount slightly with each succeeding shipment. The court held these reductions to be evident subterfuges for the purpose of evading the law and that the defendant under the cloak of a practicing physician was selling narcotics not in the regular practice of his profession.

This decision confirms the constitutionality of the Harrison law, which has already been upheld in a number of similar decisions. It emphasizes the moral justification for the law and holds that a law can have at the same time both a moral and a practical justification. It affirms the value of expert testimony in deciding what are proper methods of treating drug addiction, and it further holds that personal attendance on the part of a physician is a necessary part of such treatment.

DEPORTATION OF WOMEN WITH VENEREAL DISEASE

According to an item published in the *Star and Herald* of the Republic of Panama, under a decree issued by the government of the republic, 124 women are to be deported from Panama. The law under which this decree was issued, provides for the deportation of all loose characters, or persons of ill-fame resident in the republic, irrespective of nationality. The government of the republic has considered that the best means to keep the cities and towns moral is to deport these women to their native countries. Of the 124 women to be deported, 84 were from the island of Jamaica, 7 from the island of Barbados, 2 from the island of St. Lucia, 5 from the island of Trinidad, 19 from the island of Martinique, 5 from the island of St. Thomas, and 2 from the island of Porto Rico.

Medicolegal

Leaving Packing Without Notifying Patient

(*Studyvin v. Weston (Iowa), 171 N. W. R. 15*)

The Supreme Court of Iowa, in affirming the order of the trial court, as having properly directed a verdict for the defendant at the close of the plaintiff's evidence, says that the plaintiff was in a hospital in care of the defendant as a surgeon for a period of five days. He performed a surgical operation on her consisting in lancing of urethral abscess. It was located on the urethra and on the vagina wall. At the time of the operation the defendant used a piece of cheesecloth or surgeon's gauze for the purpose of absorbing blood and pus from the incision. This was placed as a packing within the vagina. The particular piece used by the defendant was described by the plaintiff's husband as a witness as being 2 feet long and 2½ inches wide. Ten weeks after the discharge of the plaintiff from the hospital she discovered a smaller piece of cloth or gauze within the vagina and removed it. The ultimate complaint of her pleading was that the defendant failed to advise her that he had inserted any cloth or gauze in the vagina, and that she was thereby prevented from discovering its presence, and that its long continuance therein resulted in injury to her. Her experts testified that the use of gauze or cloth was proper, and that its long continuance without change was not necessarily injurious, though very offensive. At the expiration of five days the plaintiff left the city, and accepted no further attention from the defendant. Up to that point of time the presence of the packing in the vagina was neither injurious to the plaintiff nor wrongful on the part of the defendant. If the plaintiff did not know of its presence, her husband did. Its removal called for no surgical skill. Moreover, it might well be assumed that during her further convalescence she would seek the aid of a local physician, and the presence of the packing would be readily discovered by any physician.

Assuming, however, for the sake of the argument, that the defendant should have warned the plaintiff and should have instructed her as to the removal of the packing, and that he failed in his duty in such respect, yet the evidence wholly failed to show that the presence of the packing resulted in any injury to her. At the time of the operation and for some

time prior thereto, the plaintiff was suffering from a serious disease. One of the resulting effects of such disease was the abscess for which she obtained surgical relief. The surgical operation was not calculated to check the disease. The defendant did not treat her for such disease. The symptoms suffered by the plaintiff after the surgical operation were of the same kind as those suffered before the operation, though they grew more severe with the progress of the disease. Two expert witnesses testified on behalf of the plaintiff that the presence of the packing for such inordinate length of time could produce septicemia, especially in view of its contact with a surgical wound. But they testified also that even this was improbable. It appeared affirmatively and without dispute that the surgical wound "healed all right," and that it was involved in no complication whatever. There was no evidence, expert or otherwise, that the plaintiff had suffered from septicemia. On the entire record the court is satisfied that no cause of action was disclosed against the defendant.

Cold Storage Limitation to Protect Public Health

(*Nolan v. Jones et al.* (*Pa.*), *106 Atl. R. 235*)

The Supreme Court of Pennsylvania holds constitutional the statute of that state, of 1913, entitled "An act for the protection of the public health and the prevention of fraud and deception, by regulating the storage and sale of cold-storage foods," etc., so far as it limits the time within which foods, particularly butter, may be held in cold storage, and then sold or offered for sale, as that no butter which is held in cold storage for a longer period than nine months shall be sold, offered or exposed for sale. The court says that no part of the federal constitution, or any of the amendments thereto, takes from the states the right to determine what shall be prohibited as prejudicial to the public good; and the fact that, under the peculiar circumstances of any given case, the particular article condemned happens to be "wholesome" cannot affect the application of a legitimate police statute comprehending a whole class of objects, of which the kind in question is one, the class being such as reasonably justifies regulation for the preservation of the public health. It is a matter of common knowledge that food will start to decay even in cold storage, and many articles, when subjected to a long period of such treatment, although able successfully to withstand inspection immediately before removal, will thereafter rapidly putrefy or deteriorate; hence it cannot be held that any measure beyond enforced inspection is unreasonable. Ordinarily it is for the legislature to determine whether inspection or prohibition is the appropriate remedy, and there is nothing about the present statute which would justify the court either in determining that the inhibition under attack is an unreasonable exercise of police power or in assuming that the law was enacted otherwise than in good faith and for the public welfare. In Pennsylvania only the special legislation that is expressly forbidden in Section 7, Article 3, of the state constitution is invalid on that particular ground, and there is no prohibition to be found therein against special food laws; furthermore, cold storage food is now so universally used that it has, even in popular acceptance, fallen into a class by itself, which requires legislative regulation for "the protection of the public health." This is not undue, but just and proper, classification; and, because an act such as the present of necessity fails to govern articles not placed in cold storage, that fact does not, in any legal sense, make the statute one granting special "privileges and immunities" to the owners of the latter class of food; or, to put it more concretely, if it were conceivable that butter could be preserved in salable condition for more than nine months without modern, scientific cold storage, and hence that owners thereof would be privileged to dispose of their property, on the market, under circumstances which would deprive owners of cold storage butter from so doing, that would not make the legislation before the court subject to the charge of granting exclusive privileges and immunities to a special class. The statute is general in that it applies to a distinct and justifiable class, and all persons dealing in food articles, at their option, may or may not bring themselves within the statute.

Society Proceedings

COMING MEETINGS

American Academy of Medicine, Harrisburg, Pa., Sept. 23.
American Academy of Ophth. and Oto-Lar., Cleveland, O., Oct. 16-18.
American Assn. Medical Milk Commissioners, New Orleans, Oct. 27-30.
American Assn. of Railway Surgeons, Chicago, Oct. 15-17.
American Public Health Assn., New Orleans, Oct. 27-30.
Colorado State Medical Society, Denver, Oct. 7-9.
Delaware State Medical Society, Dover, Oct. 13-14.
Indiana State Medical Assn., Indianapolis, Sept. 24-26.
Kentucky State Medical Assn., Ashland, Sept. 23-25.
Medical Assn. of the Southwest, Oklahoma City, Oct. 6-8.
Minnesota State Medical Assn., Minneapolis, Oct. 2-3.
Mississippi Valley Medical Assn., Louisville, Ky., Oct. 21-23.
New Mexico Medical Society, Albuquerque, Oct. 3-4.
Pennsylvania State Medical Society, Harrisburg, Sept. 22-25.
Southern Medical Association, Asheville, N. C., Nov. 10.
Vermont State Medical Society, Burlington, Oct. 9-10.
Wisconsin State Medical Society, Milwaukee, Oct. 1-3.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

September, 1919, **18**, No. 3

*Leukocyte Counts During Influenza in Infants and Children. J. C. Montgomery and E. C. Dunham, Baltimore.—p. 153.
*Fat Metabolism of Infants and Young Children. IV. Digestion of Some Vegetable Fats by Children on a Mixed Diet. L. E. Holt, A. M. Courtney and H. L. Fales, New York.—p. 157.
*Cerebrospinal Involvement in Hereditary Syphilis. P. C. Jeans, St. Louis.—p. 173.
*Incidence and Significance of Rheumatic Nodules in Children. J. Brennemann, Chicago.—p. 179.
*Cerebral Complications in Mumps. H. R. Casparis, Baltimore.—p. 187.
*Case of Diabetes Insipidus in a Girl of Ten Years from Standpoint of Endocrinal Involvement. D. M. Cowie, Ann Arbor, Mich.—p. 194.
*Toxic Properties of Heated and Decomposed Milk and of Milk Cultures of Bacterium Welchii (Bacillus Aerogenes Capsulatus). W. W. Ford, Baltimore.—p. 199.

Leukocyte Counts During Influenza.—Leukocyte counts were made by Montgomery and Dunham in thirty cases of influenza occurring in infants and children less than 12 years of age. They found that the tendency in uncomplicated influenza in infants and children is toward a leukopenia, rather than a leukocytosis. There is a tendency to a slight leukocytosis in complicating pneumonia. In this series, in all pneumonia cases resulting fatally, the leukocyte counts were under 10,000. The prognosis, in general, is better in pneumonia cases which exhibit a leukocytosis. Differential counts have shown: (*a*) a tremendous variation in the differential formula, and (*b*) nothing sufficiently constant to be of clinical aid in diagnosis or prognosis.

Fat Metabolism of Infants.—The observations recorded by Holt and others indicate that corn oil and nut butter, the vegetable fats studied, are valuable foods for children, are exceedingly well borne and are apparently digested and absorbed with ease. The authors, therefore, feel warranted in the belief that these articles may safely be introduced into the regular diet of children, and that to a considerable degree they may be substituted for the more expensive milk fat, given either as milk or as butter, but they should never entirely replace milk fat. How much milk fat is needed to furnish the amount of the fat-soluble vitamin required for normal growth and nutrition has not yet been determined by the authors.

Cerebral Involvement in Hereditary Syphilis.—According to a survey of the literature by Jeans there is found involvement of the central nervous system, as shown by the cerebrospinal fluid, in about one third of all individuals with acquired syphilis. Among the 214 patients having hereditary syphilis

who were studied by Jeans, a similar incidence of involvement of the central nervous system was found.

Rheumatic Nodules.—According to Brennemann all observers are agreed on two points, practically: the rheumatic nodule means rheumatism and it practically always means endocarditis. These nodules vary in number from one or two to 100 or more—commonly there are eight or ten. If numerous, they are always widely scattered. The greater the number the more surely will some of them be very large, especially over the patellas, the back of the head, or on the spines of the vertebrae. They occur always in connection with the deep fascia, the tendons, or the periosteum, but they have favorite localizations. Thus they are nearly always found, if present at all, about the condyles of the humerus, and in and about the olecranon process. Occasionally, a very large one is found near the end of the olecranon process that is almost indistinguishable till it is found to be movable. It is especially about the elbow that the joint must be flexed properly, and careful search made both with the eye and the finger. They are rarely as large here, except over the olecranon, as they are in other locations where they are connected with the periosteum. In Brennemann's experience they occur relatively frequently and are very large, not only the margins as commonly reported, but over nearly the whole of the patella, commonly on both knees. When the knee is flexed sharply they are very conspicuous. They are frequently found over the malleoli, especially over the external malleolus, on the styloid processes of the radium and of the ulna, but they are never large or numerous here. A striking and not uncommon location is on the knuckles and sometimes the tendon of nearly every knuckle is the seat of from one to five nodules. If the hand is open they quite escape notice; if the hand is tightly clenched they appear as prominent, shining, whitish or grayish clusters along the tendons. Less frequently they occur on the toes. In six or eight cases the most prominent nodules have been under the scalp, always on the back of the head. If present, there are usually from two to six, or more, large bumps nearly the size of a hazel nut. Occasionally they show a distinct predilection for the spine, where they may be hard to find if laterally or deeply seated, and most conspicuous if located on the tips of the spinous processes. Occasionally they occur along the spines and vertebral borders of the scapulae, less frequently about the shoulder joint and along the crests and articulations of the ilia. Rheumatic nodules have a tendency to appear in groups, or waves. The life of the individual nodule varies from a few days to as many months.

Cerebral Complications in Mumps.—Casparis records two cases. In one the disease was ushered in by delirium and vomiting and in the other by headache with tâche cerebrale.

Diabetes Insipidus.—With a view to determining whether endocrinal involvement was present in Cowie's case, roentgenographic examination of the sella turcica was made, and epinephrin and glucose blood sugar curves were studied, but the result was negative, hence Cowie concludes that the case was idiopathic in origin.

Toxic Properties of Milk.—Milk heated to 80 or 85 C. for from twenty to thirty minutes and kept at 37 C. decomposes with the elaboration of definite poisonous substances, a fact which, Ford says, should be kept clearly in mind in the consideration of the problem of milk pasteurization; and, under all circumstances, milk heated to temperatures sufficient to destroy vegetative bacteria but not their spores should be kept at a low temperature to prevent the development of these spores and should be used within a brief interval after the heating. Whether the bacterial products found in this decomposed milk have any poisonous action when taken into the digestive tract has not been determined, but in view of their presence in milk the practice of keeping pasteurized milk for any considerable period of time before using is condemned strongly by the authors. Finally, the occurrence of toxic substances in heated milk arising from the development of spore bearing bacteria requires a rigid supervision of milk production before pasteurization to prevent the entrance of organisms of this character.

American Journal of Medical Sciences, Philadelphia and New York

September, 1919, **158**, No. 370

*Food Factors in Gastroenterology. L. B. Mendel, New Haven.—p. 11.
Terminal Stage of Case of Hepatic Cirrhosis. F. M. Allen, Lakewood, N. J.—p. 307.
*Diagnosis of Late Syphilis of Central Nervous System. C. Frothingham, Boston.—p. 312.
Murmurs of Mitral Stenosis and of Aortic Regurgitation. H. E. B. Pardee, Montclair, N. J.—p. 319.
Comparison of Medical Casualties in British and American Troops at a General Hospital in France. R. Fitz, Boston and A. Cunningham.—p. 328.
*Spinal Decompression. N. Sharpe, New York.—p. 335.
Prominent Features of Psychoneuroses in War. J. F. W. Meagher, U. S. Army.—p. 344.
*Localization of Tumor Metastases. G. E. Armstrong and H. Oertel, Montreal, Canada.—p. 354.
Isolation of Meningococcus from Cases of So-Called Influenza. R. Kinnicutt and C. A. Binger, U. S. Army.—p. 360.
Account of An Epidemic of Influenza Among American Troops in England. F. M. Meader, J. H. Means, and J. G. Hopkins, U. S. Army.—p. 370.
*Unidentified Pandemic Disease (Influenza?) D. Roberts, New York.—p. 397.
Pneumonia as a Complication of Epidemic Influenza. A. V. Bock and J. L. Stoddard, Boston.—p. 407.

Food Factors in Gastro-Enterology.—Mendel emphasizes the fact that dietetics offers no cure-alls to the gastroenterologist, nor does any other mode of therapy. Calories, proteins, vitamins, acidophilic bacteria, merely furnish viewpoints from which important problems of practice may be examined.

Diagnosis of Late Syphilis of Central Nervous System.—Inasmuch as lumbar puncture is practically without danger, and as it opens up a means of diagnosing late syphilis of the central nervous system when other diagnostic means fail, and as late syphilis of the central nervous system calls for a special form of treatment, Frothingham believes it fair to demand that in all cases of old syphilis a lumbar puncture should be performed as a diagnostic procedure before instituting treatment.

Spinal Decompression.—The value of operation for cranial decompression, especially that of subtemporal decompression in supratentorial lesions, has been well recognized for years, Sharpe maintains that laminectomy for spinal decompressions or for exploration is of equal if not greater value. It has in the past been employed but rarely, and then usually at the wrong time, and as a last resort when all other measures have failed and the nerve tissue is irreparably damaged. And yet there can be no doubt that in patients having obscure lesions of the cord or in doubtful diagnoses an exploratory laminectomy, frequently terminating as a simple decompression, has been followed by remarkable improvement of the patient. The spinal operation has an advantage over the cranial decompression, for while a cranial decompression may be used for an exploratory procedure, the lesion itself can rarely be removed through the original incision; so that a second operation, the formation of an osteoplastic flap, is frequently necessary. But in spinal laminectomy the major part of the cord at the supposed site of the lesion is before the eye of the operator for exploration, and spinal decompression, exploration and possible removal of a lesion can be carried out at the one operation. Furthermore, diagnosis and localization of cord lesions is more accurate than the lesions of the brain. Sharpe discusses the value of exploratory laminectomy in cases of doubtful diagnosis or lesions of obscure origin which can be localized, and the value of spinal decompression in certain selected cases of well recognized forms of cord disease which formerly were not considered amenable to surgical interference.

Localization of Tumor Metastases.—Armstrong and Oertel claim that the localization of metastases depends on a number of factors. Important among these are: 1. The quantity of the tumor elements and the methods of dissemination. 2. Effects of injurious metabolic products of tumor cells on a tissue, causing degeneration and inflammation and thereby weakening its physiological resistance. 3. Close biogenetic (embryonic) relation of tumor cells to a tissue soil, whereby types of tumor cells derived from an embryonic layer grow

more readily in the environment of organs or tissues which are derived from the same layer of the blastoderm.

Unidentified Pandemic Disease.—Intravenous injections of a mixed influenza vaccine, given in doses sufficiently large to cause a definite reaction consisting of a chill or definite chilly sensation one-half hour after the injection, accompanied by a rise in pulse rate and sometimes by a slight fall in temperature, Roberts believes to have been the best form of treatment used in several hundred of these cases. In a consecutive series of 200 cases of definite influenzal pneumonia treated by his plan the mortality was 9.6 per cent. This was in striking contrast to a series of eighty-six consecutive cases treated by an expectant plan with a mortality of 3.13 per cent. By this plan of treatment not all cases can be saved, but Roberts was convinced that in many cases which were naturally terminated fatally the patient recovered promptly in the most striking manner.

American Journal of Ophthalmology, Chicago

August, 1919, **2**, No. 8

Congenital Choroideremia. A. B. Connor, Chicago.—p. 553.
Eyes of Signalman. A. Duane, New York.—p. 555.
Organization and Activities of Ophthalmic Service in A. E. F. A. Greenwood, Boston.—p. 565.
Penetrating and Perforating Wounds of Eyeball with Diagnosis and Treatment of Retained Foreign Bodies. W. T. Shoemaker, Philadelphia.—p. 590.
Ocular Complications of Peripheral Epilepsy. J. M. Penichet, Havana, Cuba.—p. 594.
Infectious Granuloma of Lacrimal Gland. D. W. Wells, Boston.—p. 597.
Location of Trephine Opening in Glaucoma Subsequent to Cataract Operation. R. I. Lloyd, Brooklyn, N. Y.—p. 601.
Strabismus. F. Valk, New York.—p. 603.
New Method of Suturing in Advancement Operation for Strabismus. J. G. Huizinga, Grand Rapids, Mich.—p. 606.
Refraction in Keratoconus. J. de J. Gonzales, Leon, Mexico.—p. 606.
Some Eye Complications in Influenza. A. S. Green and L. D. Green, San Francisco, Calif.—p. 607.

Boston Medical and Surgical Journal

Sept. 4, 1919, **181**, No. 10

Gaseous Exchange with Unpracticed Subjects and Two Respiration Apparatuses Employing Three Breathing Appliances. M. F. Hendry, T. M. Carpenter and L. E. Emmes, Boston.—p. 285. To be continued.
Reconstruction of a German Shell Shattered Arm. C. L. Scudder and F. J. Callanan, Boston.—p. 296.
Graphic Method for Recording Conjugate Deviation Tests, and Its Use. E. A. Tracy, Boston.—p. 299.
*Result of Examination of Prostate and Vesicles in 125 Cases with Negative Venereal History. G. G. Smith, Boston, and H. N. Klein, U. S. Army.—p. 300.

Examination of Prostate and Vesicles in 125 Cases with Negative Venereal History.—Including all the cases noted in their records as having had no venereal disease, Smith and Klein found that sixteen cases out of 125 showed more than two pus cells per oil immersion field and might, therefore, be said to have prostatitis or vesiculitis. Cases with indurated vesicles but with no pus in the secretion were not included. In this series of 125 cases, therefore, about 13 per cent. of the men who had no venereal disease, showed definite signs of a prostatitis or vesiculitis. In practically all of these there were no symptoms referable to the prostatic condition, nor did it seem, in any of these cases, as if their arthritis was due to infection from this source.

Iowa State Medical Society Journal, Des Moines

Aug. 15, 1919, **9**, No. 8

Medical Department of Iowa State University at Iowa City. D. S. Fairchild, Clinton.—p. 265.
Prophylactic and Symptomatic Treatment in Eclampsia. F. J. Smith, Little Rock.—p. 268.
Cocain in Treatment of Keratitis. E. H. Hazen, Oakland, Calif.—p. 273.

Journal of Experimental Medicine, Baltimore

Sept. 1, 1919, **30**, No. 3

Biology of Streptococcus. I. Antigenic Relationships Between Strains of Streptococcus Hemolyticus. A. R. Dochez, O. T. Avery, and R. C. Lancefield, New York.—p. 179.
*Oxygen of Arterial and Venous Blood in Pneumonia and Its Relation to Cyanosis. W. C. Stadie, New York.—p. 215.
*Oxygen and Carbon Dioxid Content of Arterial and of Venous Blood in Normal Individuals and in Patients with Anemia and Heart Disease. G. A. Harrop, Jr., Baltimore.—p. 241.
*Cyanosis. I. Primary Causes of Cyanosis. C. Lundsgaard, Copenhagen.—p. 259.
Cyanosis. II. Secondary Causes of Cyanosis. C. Lundsgaard, Copenhagen.—p. 271.
*Erythrosis, or False Cyanosis. C. Lundsgaard, Copenhagen.—p. 295.

Oxygen of Blood in Pneumonia.—The results of a study of thirty-three cases of pneumonia in which the oxygen of both arterial and venous blood were determined are given by Stadie. The Rockefeller Institute arterial puncture was done six times on one patient without injury. In all, about ninety punctures were made and no ill results have been observed. In five normal subjects the mean arterial unsaturation was 5 per cent. of the total oxygen capacity; the mean venous unsaturation was 26.8 per cent. In the pneumonia cases the arterial oxygen unsaturation varied from 0.0 to 68.2 per cent.; the venous oxygen unsaturation varied from 14.4 to 85.5 per cent. In the fatal cases, as opposed to the nonfatal cases of pneumonia, the mean arterial oxygen unsaturation was 32 per cent. as against 13.9 per cent. As a rule, an arterial unsaturation of over 20 per cent. was associated with a fatal outcome. Similarly, the mean venous oxygen unsaturation was 57 per cent. in the fatal cases and 36.3 per cent. in the nonfatal cases. In five cases in which no cyanosis was observed at any time, the mean arterial oxygen unsaturation was 5.4 per cent. the mean venous oxygen unsaturation 31.5 per cent. In cases which showed cyanosis of varying degree during the course of the illness, the mean arterial unsaturation was 24.7 per cent., and the mean venous unsaturation 44.5 per cent. Cases without cyanosis have an arterial unsaturation close to the normal. There is a definite relation between the degree of cyanosis and the percentage of arterial unsaturation. With increasing cyanosis the arterial unsaturation becomes greater. The venous unsaturation varies similarly. In individual cases with marked cyanosis, associated with high arterial unsaturation, the clinical improvement of the patient and the diminution of the cyanosis were accompanied by a similar diminution in the arterial and venous unsaturation. Conversely, an increase of cyanosis was accompanied by an increase in arterial unsaturation. It is evident to Stadie that the cyanosis of pneumonia patients is due to the incomplete saturation of venous blood with oxygen in the lungs, and that the various shades of blue observed in the distal parts are caused by an admixture of reduced hemoglobin and oxyhemoglobin in the superficial capillaries. No unusually low total oxygen capacities were observed, even in fatal cases with intense cyanosis. On the contrary, in these cases the total oxygen capacity was unusually high, pointing toward a concentration of the blood. Again, in only one case was there any marked fall in the oxygen capacity during the illness. Therefore, methemoglobin formation, in these cases, can hardly have occurred to such an extent as to be an important factor in the production of cyanosis. Of the thirty-three cases studied, however, only seven were lobar pneumonia cases, the rest being of types ordinarily unusual and which have accompanied the recent influenza epidemic; and of the seven, not all were in all respects typically lobar. The possibility still remains, therefore, that in typical lobar pneumonia caused by the pneumococcus, methemoglobin may play a part in the cyanosis.

Blood Gases in Anemia and Heart Disease.—The data presented by Harrop indicate that at least in many circulatory diseases during decompensation, particularly when there are physical signs of pulmonary congestion, there is a disturbance of the pulmonary exchange, as indicated by the lowering of the percentage saturation of the arterial blood with oxygen. The oxygen consumption tended to be high in individuals with cardiac disease during the periods of marked decompensation and lower as compensation was regained.

Causes of Cyanosis.—The data presented by Lundsgaard in these two papers are said to prove that abnormally high oxygen unsaturation of the blood is a cause of cyanosis. This increased oxygen unsaturation may be produced in two ways: (*a*) by an increased reduction of oxyhemoglobin to reduced hemoglobin in the peripheral capillaries, and (*b*) by an incomplete oxidation of the venous blood in the lungs. No

quantitative parallelism exists between the degree of cyanosis and the amount of oxygen unsaturation of the venous blood. The first condition occurs during exercise or when the blood flow is retarded, as in decompensated heart condition. The second condition occurs in certain lung and heart diseases, and when the alveolar oxygen tension is greatly decreased, as at high altitudes. If the blood is completely saturated with oxygen in the lungs, the oxygen unsaturation of the venous blood may increase from thirteen to fourteen volumes per cent., some arterial oxygen unsaturation may be assumed, and the greater this, the lower the venous oxygen unsaturation is. Even if neither râles nor dulness can be detected in the lungs, conditions may exist which prevent complete oxidation of the arterial hemoglobin. This is especially frequent in patients with mitral lesions. Cyanosis cannot be produced in patients whose hemoglobin percentage is below 35 in the Haldane scale (oxygen capacity of 6.5 volumes per cent.).

Erythrosis, or False Cyanosis.—In the venous blood of a patient with Vaquez' disease normal values were found by Lundsgaard for the oxygen unsaturation (reduced hemoglobin), although the total hemoglobin and oxygen capacity were abnormally high. The carbon dioxid content was normal. The color of the skin and mucous membranes was more reddish than blue. Lundsgaard proposes to term this condition erythrosis in order to distinguish it from cyanosis.

Journal of Medical Research, Boston

May, 1919, **40**, No. 1

Developmental Phases of Protozoon of "Blackhead" in Turkeys. E. E. Tyzzer, Boston.—p. 1.
Senile Changes of Testis and Prostate in Dogs. L. W. Smith, Boston. —p. 31.
*Reactions to Chilling of Body Surface. Experimental Study of Possible Mechanism for Excitation of Infections of Pharnyx and Tonsils. S. Mudd and S. B. Grant, St. Louis.—p. 53.
*Cirrhosis of Liver Following Intraportal Injection of Toxic Substances. S. Ogata, Chicago.—p. 103.
*Influence of Alcohol and Nicotin on the Ovary. S. Ogata, Chicago. —p. 123.

Reactions to Chilling of Body Surface.—A method and instruments are described by Mudd and Grant by means of which changes in the temperature of the skin and exposed mucous surfaces of human subjects may be followed quantitatively. The method consists essentially in holding in apposition with the surfaces, by means of specially devised "applicator," the terminals of a thermophile in circuit with a d'Arsonval galvanometer. From the thermometer and galvanometer readings the absolute temperature of the surface beneath the thermopile junctions is readily computable at any time. By this thermogalvanometric method the temperature of the skin and oral and pharyngeal membranes was shown to fall with chilling of distant areas of the body surface and to rise again on rewrapping the subject. Control experiments showed the blood temperature relatively unaltered by such cutaneous chilling: such small changes as were effected were in the direction of a minute rise with chilling and a fall on rewrapping. Two control experiments showed no consequential changes in blood pressure with cutaneous chillings. Animal experiments have resulted in a rise of blood pressure with chilling. An increase in volume of respiratory exchange was found to result from cutaneous chilling. Such respiratory increase usually caused a depression of mucous membrane temperature. Changes in temperature of the skin or exposed mucous surfaces are thus shown to be the result of changes in vasomotor tone in the vessels supplying those surfaces. A fall in superficial temperature indicates vasoconstriction; a rise, vasodilation. Chilling of the body surface causes reflex vasoconstriction in the skin of the head and neck. Earlier attempts at explaining the excitation of pharyngeal and tonsillar infections by cutaneous chilling have been based on the assumption that such chilling causes congestion of the mucous membranes. These experiments show, on the contrary, that chilling of the body surface causes reflex vasoconstruction and ischemia in the mucous membranes of the palate, faucial tonsils, oropharynx and nasopharynx. In four instances exposure was followed by a "cold" or sore throat. The mucous membranes of one subject remained normal after sixteen exposures.

Experimental Cirrhosis of Liver.—In the cases in which Ogata injected alcohol into the portal and mesenteric veins repeatedly there were seen marked cirrhotic changes in the interlobular spaces, with often newly formed bile ducts, especially marked in one case; and in addition in two of the cases there was also a marked round cell infiltration with increase of connective tissue in the central portions of the lobules. Further, he saw also in this series various pronounced degenerative changes of the liver parenchyma. The cirrhosis, however, was not the same as Laënnec's cirrhosis of the liver. On the other hand, in the series of cases in which he injected alcohol repeatedly into the ear vein, he observed but slight changes in the interlobular spaces and in the parenchyma of the liver. The difference observed in the two groups of experiments Okata thinks may be due to the difference in concentration of the alcohol as it arrives in the liver. It is evident that the repeated injections of extract of cigar tobacco into the portal and mesenteric veins may have some toxic effects on the liver. Through the repeated injections of sterilized emulsion of human tubercle bacilli into the portal vein and mesenteric veins of the rabbit, there followed marked changes resembling tuberculous lesions which were followed by an increase of connective tissue, chiefly in the interlobular spaces, together with some toxic effects on the parenchyma of the liver. These experiments seem to indicate, then, that cirrhotic changes in the liver may be produced by killed tubercle bacilli and their toxic products without the presence of any living tubercle bacilli, and that there may be some relation between tuberculosis, especially of the peritoneum and intestine, and cirrhosis of the liver. Sterilized colon bacilli and their toxic products may produce cirrhotic changes in the liver, though not the same as Laennec's cirrhosis.

Influence of Alcohol and Nicotin on Ovary.—Ogata's observations show that the fact that chronic alcoholism of parents has a great influence on their descendants seems to be principally dependent on the injurious influence of the alcohol on the spermatozoon, though in a less degree it may depend on the influence of alcohol on the ovary. There is no apparent influence of nicotin on the ovary.

July, 1919, **40**, No. 2

Comparative Study of Leismania Infantum of Infantile Kala Azar and Leptomonas (Herpetomonas) Ctenocephali Parasitic in Gut of Dog Flea. E. E. Tyzzer, Boston, and E. L. Walker, Berkeley, Calif. p. 129.
*Study of Micro-Organisms Found in Merchantable Canned Foods. E. W. Cheyney, Boston.—p. 177.
*Compensatory Hypertrophy of Thyroid. L. Loeb, St. Louis.—p. 199.
*Types of Streptococci Found in Sputum of Bronchial Asthmatics. I. C. Walker and J. Adkinson, Boston.—p. 229.

Micro-Organisms Found in Canned Foods.—Seven hundred and twenty-five cans of merchantable foods in prime condition were carefully examined by Cheyney for bacteria, molds and yeasts. Fifty-eight, or 8 per cent., of these cans, were found to contain living micro-organisms. Not all foods contained them, however, some being found always sterile, some with a constantly low percentage, others with a high percentage of cans containing viable micro-organisms. There was a uniform average found throughout for each food; vegetables being sterile or showing only a small number of cans containing viable organisms (8 per cent.), fruits showing a consistently lower number (3 per cent.), fish and meats varying from 10 to 20 per cent. The micro-organisms isolated constitute a sharply limited group of resistant spore-bearers, including the *B. subtilis-mesentericus* group, the related thermophils, an anaerobe, four common species each of aspergillus and penicillium, and two borderline yeasts. No pathogenic micro-organisms were found. The bacteria were associated chiefly with the meats, while the molds formed the sole flora of all the fruit cans found to contain living micro-organisms. Thermophils were found only in crab and lobster. There was evidence to suggest that in certain foods the bacteria and molds had persisted through the processing, and that the usual methods of processing must be increased to obtain actual sterility in these foods.

Compensatory Hypertrophy of Thyroid.—From Loeb's experiments the following conclusions are drawn: (1) If in a

pregnant guinea-pig an almost complete extirpation of the thyroid is carried out, pregnancy may continue to take its normal course. Pregnancy does not promote, and perhaps retards in certain cases, compensatory hypertrophy of the thyroid in the mother; and under such conditions hypertrophy of the thyroid in the offspring does not need to take place. There is so far no definite proof that such hypertrophy ever occurs if the thyroid of the mother had previously been extirpated. In the majority of cases, abortion seems to follow an almost complete extirpation of the thyroid of a pregnant guinea-pig. Abortion does not usually interfere with the occurrence of compensatory hypertrophy in the remnants of the thyroid of the mother. In a guinea-pig in which both thyroids have been almost completely extirpated, and subsequently compensatory hypertrophy has taken place, the normal sexual cycle may continue to take place and pregnancy may occur. If one lobe or one lobe and one half is extirpated in a pregnant guinea-pig, pregnancy may proceed. Under those conditions the remaining parts of the thyroid show no deviations from the usual results of these operations. After extirpation of one and one half of the thyroid, a very mild degree of hypertrophy was found in the remaining part.

Streptococci in Sputum of Bronchial Asthmatics.—The different types of streptococci found by Walker and Adkinson in asthmatic sputum are not numerous. Practically all of the hemolytic streptococci were included in the four types, namely, *S. subacidus, S. anginosus, S. pyogenes* and *S. infrequens.* Practically all of the nonhemolytic streptococci were included in the four types, *S. nonhemolyticus* I., *S. ignavus, S. salivarius* and *S. mitis.* In doing the skin tests on bronchial asthmatics, it would seem to be advisable to use the protein of these types of mico-organisms rather than the protein of any one type alone. As a rule, the thick sputum of asthmatics, provided it is washed, contains very few different types of bacteria, and contamination by mouth or air organisms is unusual. For these reasons autogenous sputum vaccines seem to be practical, but they should be made at frequent intervals, since the types of organisms present in sputum are not constant, and therefore there is a chance that some vaccines may not contain the particular organism which is causing symptoms.

Journal of Urology, Baltimore

June, 1919, **3**, No. 3

*War Nephritis. N. M. Keith and W. W. D. Thomson.—p. 87.
Experimental Hydronephrosis—Repair Following Ureterocystoneostomy in White Rats with Complete Ureteral Obstruction. H. Hinman, San Francisco.—p. 147.

War Nephritis.—The investigation reported on by Keith and Thomson was carried out in thirty-three cases specially selected from about 300. These were all typical cases of war nephritis, and, with one exception, only those were included which from their previous history and clinical condition negatived as far as possible a previous nephritic condition. The authors divide these cases into two groups: Resolving and nonresolving. The resolving group is characterized by (*a*) rapid disappearance of edema accompanied by a distinct diuresis, copious excretion of chlorids, and fall in blood pressure; (*b*) rapid diminution in amount of albumin in urine; (*c*) relatively good renal function. The nonresolving group is characterized by (*a*) showing disappearance of edema and delayed diuresis; (*b*) persistent gross hematuria and persistence of albumin in the urine; (*c*) development of permanent retinal changes; (*d*) grave impairment of renal function. Relapses are of frequent occurrence in both types of the disease and are of serious prognostic significance. An acidosis of moderate degree is present. In the resolving group this disappears with general improvement, but in the nonresolving group alkali therapy is required to restore the normal acid base relationship. Functional tests are of the greatest value in forming an opinion as to the extent of renal impairment. Prognosis as to ultimate complete recovery, even in the resolving group, must be guarded. In the nonresolving group many cases show relatively early in the disease evidence of permanent renal change. The exhibition of alkali is of distinct service in many cases as shown not only by a restoration of the normal acid base relationship in the blood, but also by an improvement in renal function. When death occurs in the first two weeks of the disease an intracapillary glomerulitis is the most striking histologic feature; when death occurs in the fifth week there is found, in addition, a proliferation of the cells lining Bowman's capsule, intense edema of the interstitial tissue, small round celled infiltration and flattening of the epithelium lining the convoluted tubules. When death has been delayed to the seventh week of the disease the proliferated cells of Bowman's capsule are replaced by fibrous tissue, with resulting sclerosis of the malpighian tuft, increase of interstitial tissue, and widespread and severe tubular changes.

Laryngoscope, St. Louis

August, 1919, **29**, No. 8

Hemorrhage in Epidemic Influenza. M. A. Goldstein, St. Louis.—p. 447.
Use of the Pitch Range Audiometer in Otology. S. W. Dean and C. C. Bunch, Iowa City, Iowa.—p. 453.
Submucous Correction of Nasal Septum. J. A. Cavanaugh, Chicago.—p. 463.
Limitations of Diagnostic Value of Roentgenogram in Disease of Nose and Ear. J. Guttman, New York.—p. 472.
Correction of Nasal Deformities by Implantation of Bone: Improved Technic. W. W. Carter, New York.—p. 476.
History of an Obscure Case of Intracranial Infection with Necropsy Findings. P. D. Kerrison, New York.—p. 480.
Idiopathic Epilepsy Found to Be Due to Empyema of Antrum of Highmore. Operation and Recovery. J. C. Keeler, Philadelphia.—p. 484.
Nasopharyngeal Conditions, Tending to Prolong Meningococcus Carriage. J. W. Babcock, New York.—p. 486
Case of Chronic Purulent Otitis Media Complicated by Thrombosis and Cerebellar Abscess; Operation; Recovery. H. Tanaka, Takasaki, Japan.—p. 491.

Missouri State Medical Association Journal, St. Louis

September, 1919, **16**, No. 9

Management of Streptococcus Empyema. H. P. Kuhn, Kansas City.—p. 285.
Mechanics of Fluid in Pleural Cavity. L. Clendening, Kansas City.—p. 287.
Irritable Heart of Soldiers. J. C. Lyter, St. Louis.—p. 291.
Base Hospital No. 21. W. Fischel, St. Louis.—p. 293.
Hour Glass Uterus. F. E. Wilhelm, Kansas City.—p. 295.
Suppuration of Frontal Sinus and Its Complications. W. D. Black, St. Louis.—p. 298.
Neuroretinitis (Choked Disk) Sequel to Thyroid Extirpation. J. W. Sherer, Kansas City.—p. 304.

New York Medical Journal

September, 1919, **110**, No. 10

Work of Physical Reconstruction as It Concerns Orthopedic Surgery. J. E. Goldthwait, Boston.—p. 397.
Some of the Different Aspects Between Influenza, Pneumonia and Pneumonic Plague. S. T. Lee, Paris, France.—p. 401.
Variability in Vulcanization the Cause of Psoriasis. G. Elliott, Toronto.—p. 403.
Chronic Appendicitis. Study of Postoperative End Results. E. MacD. Stanton, Schenectady, N. Y.—p. 406.
Practical Methods of Infant Feeding. H. Goldstein, New York.—p. 409.
What the War Has Taught Us Surgically. Wounds. J. A. Miller, New York.—p. 414.
Hemoptysis. H. Rabinowitsch, New York.—p. 416.

Ohio State Medical Journal, Columbus

September 1, 1919, **15**, No. 9

Value of Military Surgery in Civilian Practice. G. W. Crile, Cleveland.—p. 541.
*Mediastinal Dermoid; Report of Case. I. H. Harris, Columbus.—p. 547.
Insidious Aspect of Rheumatic Fever in Childhood. A. G. Helmick, Columbus.—p. 553.
Internal Medicine Problem in Base Hospital in America, France and Army of Occupation. W. G. Stoner, Cleveland.—p. 556.
*Medicolegal Aspects of Mental Defectiveness. H. H. Goddard, Columbus.—p. 558.
Impetigo Contagiosa in Infancy. J. L. Murray, Toledo.—p. 561.
Milk Situation in Dayton. S. T. Pyper, Dayton.—p. 563.

Mediastinal Dermoid.—A young woman, 19 years old, a native of Russia, complained of difficulty in breathing and weakness. The roentgen-ray examination showed a distinct shadow in the right thoracic cavity. Harris aspirated the mass and withdrew a considerable quantity of semifluid material, yellow in color. As he withdrew the needle a long hair came out with it, confirming the diagnosis of dermoid

cyst. At operation it was found that the growth occupied almost all of the right pleural cavity and was adherent to the diaphragm, pericardium and tissues about the root of the right lung and other mediastinal structures, and that it had pushed the parietal pleura in front of it as it extended outward into the thoracic cavity. The mass removed was a large cyst measuring 22x19x10 cm. the inner surface of which was covered with hair and the contents consisted of an oily lumpy material and a great deal of long brown hair. Three other small dermoids, 8x1.5 cm., were attached to the main cyst, but did not communicate with it. One about the size of a hen's egg communicated with the cavity of the larger cyst. The weight of this growth was about 2,800 gm. Owing to the fact that the lung which had been compressed by the tumor failed to expand it became necessary later to obliterate the thoracic cavity on that side. The patient then made a complete recovery.

Medicolegal Aspects of Mental Defectiveness.—Discussing the problem of the feebleminded, Goddard says that we do not protect society by punishing these individuals. Society is never safe when these mental defectives of criminal tendencies or experience are at large. The only protection is to place them in an environment suited to their low mentality. Such an environment is furnished by an institution or colony for the feebleminded. The courts are largely employed with repeaters. These repeaters are generally mentally defective. That is the logical expectation because mental defectiveness is incurable. An insane person may recover; a mental defective cannot. Once started on a criminal career there is no reforming them because of their weakmindedness. For the welfare of society and for their own happiness they must be colonized. Present laws make this a slow, difficult and costly proceedure.

Psychobiology, Baltimore

March, 1918, **1**, No. 5

Auditory Sensitivity of White Rat. W. S. Hunter, Lawrence.—p. 339.
A Simple Maze: Relation of Distribution of Practice to Rate of Learning. K. S. Lashley, Minneapolis.—p. 353.

South Carolina Medical Association Journal, Greenville

August, 1919, **15**, No. 8

Anemia in Childhood. R. M. Pollitzer, Charleston.—p. 526.
Diazo, Russo, and Weisz Reactions in Typhoid Fever. F. B. Johnson, Charleston.—p. 530.
Empyemas of Influenza. J. H. Taylor, Columbia, S. C.—p. 533.
Constructive Methods in Infant Welfare Work. L. Duke, Rome, Ga. —p. 536.

Southern Medical Journal, Birmingham

August, 1919, **12**, No. 8

Diagnosis of Diseases of Pancreas. T. R. Brown, Baltimore.—p. 433.
Diarrhea. H. Gray, Boston, and A. B. Brower, Dayton, Ohio.—p. 438.
Roentgen Ray in Diagnosis of Pulmonary Tuberculosis. J. W. Hunter, Jr., Norfolk, Va.—p. 443.
Value of a Drug. P. W. Rowland, Oxford, Miss.—p. 448.
*Studies of Malaria Control. I. Relative Frequency of Malaria in Different Ages and Age Groups in a Large Area of Great Prevalence. C. C. Bass, New Orleans, La.—p. 456.
*Studies on Malaria Control. VI. Frequency of Malaria Infection Without Recognized Symptoms, Compared with Frequency of Recognized Attacks in an Area of Great Prevalence. C. C. Bass, New Orleans.—p. 460.
*Studies on Malaria Control. VII. Proportionate Dose of Quinin Required to Obtain Same Results in Treating Malaria in Children of Different Ages as in Adults. C. C. Bass, New Orleans.—p. 462.
*Studies on Malaria Control. VIII. Observations Indicating That Effective Immunity Against Malaria Parasite Infection Does Not Occur. C. C. Bass, New Orleans.—p. 464.
*Use of Pepsin Quinin Mixture: A Treatment of Malaria Carriers. F. E. Harrington and E. Barrier, Washington, D. C.—p. 468.
Control of Malaria. J. A. LePrince, New Orleans.—p. 469.
Malaria Control a Business Man's Problem. J. A. LePrince, New Orleans.—p. 471.
Cancer of Breast. L. C. Fischer, Atlanta, Ga.—p. 475.
Rarer Forms of Sterility in Male. V. D. Lespinasse, Chicago.—p. 478.
Sterility in Women. W. T. Black, Memphis, Tenn.—p. 480.
Leukorrhea. J. E. Garrison, Birmingham, Ala.—p. 483.
Blood Transfusion. M. Beekman, Natchez, Miss.—p. 487.
Lesions of Mouth in Congenital and Acquired Syphilis. C. Watterson, Birmingham, Ala.—p. 489.
Intratracheal Injections. T. W. Moore, Huntington, W. Va.—p. 501.
Progressive Abnormalities of Refraction. R. R. Daly, Atlanta, Ga. —p. 503.

Frequency of Malaria at Different Ages.—Approximately 50 per cent. of all the malaria in the locality investigated by Bass was found in persons under 20 years of age.

Malaria Without Symptoms.— In 44.91 per cent. of these cases studies by Bass malaria either does not produce any symptoms whatever or at least does not produce symptoms that are recognized as malaria.

Malaria: Dose of Quinin for Children.—Bass states that when the child is less than 1 year of age the proportionate doses for children is $\frac{1}{20}$ that of the adult dose. From 1 year on to 15 years the dose for a child is one tenth the adult dose.

Immunity in Malaria.—Immune bodies are produced in malaria and the immunity processes contribute largely to elimination of the infection. In fact, they are usually sufficient to eliminate the infection in time without the aid of specific medication. In any given locality where malaria is very prevalent, if it were followed by lasting and effective immunity, there should be little malaria in older children and adults. In a locality where approximately 50 per cent. of the community have malaria during a given year, it is observed that malaria occurs about three fourths as frequently in adults as in children. This observation indicates that whatever immunity is produced is not lasting and effective against new infection.

Use of Pepsin Quinin Mixture for Malaria Carriers.—According to Harrington and Barrier the administration of a quinin and pepsin mixture reduces the incidence of unpleasant results about 70 per cent. as compared with the idiosyncrasies manifest following the administration of plain quinin sulphate, without any evidences of imparing the effect on the plasmodia in the circulating blood. After careful investigation, the following proportion of quinin and pepsin was adopted: Quinin sulphate, 90 parts (by weight); milk sugar, 6 parts (by weight); powdered pepsin, U. S. P., 4 parts (by weight). Mix thoroughly and place in capsules No. 0 or No. 3. This mixture gave, in capsule No. 0, 4.97 grains of quinin sulphate.

Southwestern Medicine, El Paso

August, 1919, **2**, No. 8

Concerning Refraction in Relation to Conservation of Vision. D. F. Harbridge, Phoenix, Ariz.—p. 1.
Sentiment Against Graduate Nurse.—M. V. Braun.—p. 5.
Traumatic Perinephritis and Perinephric Abscess. P. Rigney, El Paso.—p. 7.

Tennessee State Medical Association Journal, Nashville

August, 1919, **12**, No. 4

Some Practical Procedures Used by Army That Are Applicable to Civil Work. L. E. Burch, Nashville.—p. 119.
Secondary Cataract and Method of Treatment. C. M. Peavler, Bristol.—p. 122.
An Unusually Difficult Cataract Extraction and Some Other Interesting Eye Conditions. R. Fagin, Memphis.—p. 126.
Résumé of Cataract Operations. G. C. Savage, Nashville.—p. 129.
Surgical Lessons of War. W. D. Haggard, Nashville.—p. 137.
Value of Clinical Laboratory in Diagnosis. R. E. Yates, Paris. —p. 142.
Treatment of Drug Addiction. A. D. Greenfield.—p. 144.

Texas State Journal of Medicine, Fort Worth

August, 1919, **15**, No. 4

Requirements for Doing Honest and Efficient Surgery. J. S. McCelvey, Temple.—p. 145.
Standardization of Ophthalmology and Ethical Attitude to be Assumed by Its Members. J. H. Burleson, San Antonio.—p. 148.
Progressive Lenticular Degeneration or Wilson's Disease; Report of Case. M. L. Graves, Galveston.—p. 149.
Cutis Exhauriat. A. W. Acheson, Denison, Texas.—p. 153.
Hypophyon. R. W. Moore, Fort. Worth.—p. 156.

Wisconsin Medical Journal, Milwaukee

August, 1919, **18**, No. 3

Treatment of Fractured Femur. C. H. Lemon, Milwaukee.—p. 85.
Food Facts and Fancies. H. P. Greeley, Madison.—p. 90.
Acute Suppurative Otitis Media. G. H. Lawrence, Stevens Point. —p. 95.
Bunion; Its Care and Cure. H. A. Robinson, Kenosha.—p. 100.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

July 31, 1919, **13**, No. 2

Treatment of Malaria. XXVI. Action of Arsenic and Quinin on Quartan Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock and J. W. S. Macfie.—p. 97.
Treatment of Malaria. XXVII. Intravenous Injections of Novarsenobillon and Intramuscular Injections of Quinin Bihydrochlorid in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, and J. W. S. Macfie.—p. 101.
Filaria Pertenue. J. Rodhain.—p. 109.
Treatment of Malaria. XXVIII. Quitenin Hydrochlorid in Simple Tertian Malaria. J. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and W. R. O'Farrell.—p. 117.
Treatment of Malaria. XXIX. Oral Administration of Liquor Arsenicalis With Quinin Bihydrochlorid in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and W. R. O'Farrell.—p. 119.
Treatment of Malaria. XXX. At What Time After Cessation of Quinin Treatment do Relapses Occur in Simple Tertian Malaria? J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and W. R. O'Farrell.—p. 125.
Phagocytosis of Erythrocytes by An Ameba of Limax Type. W. Yorke and J. W. S. Macfie.—p. 133.
Strongylidae in Horses. VIII. Species Found in American Horses. W. Yorke and J. W. S. Macfie.—p. 137.
*Distribution and Destruction of Quinin in Animal Tissues. I. J. Lipkin.—p. 149.
*Cases of Acute Amebic Dysentery in Asylum Patients Never Out of England. A. M. Smith.—p. 177.
Case of Multiple Infection by Dracunculus Medinensis. B. Blacklock and W. R. O'Farrell.—p. 189.

Distribution and Destruction of Quinin in Animal Tissues.—Evidence is given by Lipkin bearing on the possibility that there exist in the blood vascular system regions kept almost free from quinin throughout a period of quinin medication The quinin content of tissues has been more extensively studied. Accumulation at much higher concentration in most tissues than in the blood is confirmed. The suprarenal is pre-eminent in this respect, although not so markedly with intramuscular as with intraperitoneal injections. Fairly large accumulations may occur also in the spleen and kidney; the lymph glands contain much less quinin than the surrounding blood. The liver, kidney, muscle, intestinal wall and probably pancreas, have considerable power to destroy quinin post-mortem, and, therefore, presumably during life. The blood, spleen, suprarenals, bone marrow, lymph nodes, salivary and thyroid glands have little or no such power. The quinin destroying agent extracted from the liver is thermolabile, inactivated at 100 C. and acts best in neutral media. Its action is rapid at first, but soon falls off. It does not act at all in the absence of oxygen, and is hindered by hydrogen peroxid. It can be crudely "purified" by fractional precipitation with alcohol. Quitenin is formed by the action of liver pulp on quinin. Quitenin given to a malarial patient by mouth, in ample doses, was therapeutically inert. As none appeared in the urine, this is probably true also of its metabolites. In the feces of a case of blackwater fever, a brown pigment is described which, although not itself cholecyanin, readily yields this body. New tests for quitenin and quinotoxin are described. The thalleioquin test is rendered capable of detecting easily 0.004 mg. of quinin.

Cases of Acute Amebic Dysentery in Asylum Patients Never Out of England.—Five hundred and four asylum patients were examined by Smith for intestinal protozoa. Fifty-nine of these had acute dysentery and in three of the cases vegetative *Endameba histolytica* were found in the stools. All the usual protozoa were also found in the stools, but the infections were distinctly less numerous than in the patients of another asylum previously examined.

Glasgow Medical Journal

August, 1919, **92**, No. 2

Aftermath of Malaria and Dysentery. J. Cowan.—p. 65.
Investigation into Phenomena of "Serum Disease"; Relation Between Its Various Forms and Proteins of Horse Serum. W. T. G. Davidson.—p. 75.
With the 1/1st Lowland Field Ambulance in Gallipoli. G. H. Edington.—p. 87. To be Continued.

Japan Medical World, Tokyo

Aug. 10, 1919, No. 295

*Experimental Study of Antihemorrhagic Action of a Highly Concentrated Physiologic Sodium Chlorid Solution Administered Intravenously. Otsubo.
Standardization of Antityphoid Serum. Fukuhara and Yoshioka.

Antihemorrhagic Action of Highly Concentrated Physiologic Sodium Chlorid Solution Administered Intravenously.—Otsubo determined experimentally that the antihemorrhagic action of a highly concentrated physiologic sodium chlorid solution consists in increasing the coagulability of the blood and lowering the blood pressure.

Journal of Pathology and Bacteriology, Cambridge

May, 1919, **22**, Nos. 3-4

*Can Lipoids Act As Antigen? C. Y. Wang, Edinburgh.—p. 224.
*Detection of Diphtheria Bacilli in Swabs by Means of Fluid Serum. C. Y. Wang, Edinburgh.—p. 229.
Value of Complement fixation Test as a Means of Differentiating Between Enteric Vaccinated and Typhoid Infected Persons. W. D. O'Kelly, Dublin.—p. 235.
*Experimental Scurvy in Monkeys. A. Harden and S. S. Zilva.—p. 246.
*Sebaceous Glands in Cervix of Uterus. Report of Case. G. W. Nicholson.—p. 252.
Dentigerous Cyst in Upper Jaw of a Cod. H. C. Williamson, Aberdeen.—p. 255.
Agglutination Results with Certain Dysentery Organisms Placed Against Homologous and Heterologous Serums. A. Distaso, E. Goodall and H. A. Scholberg.—p. 257.
*Spirobacillus Zeylanicus (Castellani). F. E. Taylor.—p. 262.
*Chemotherapy of Bacterial Infections, with Special Reference to Experimental Pneumococcus Infection. C. H. Browning and R. Gulbransen.—p. 265.
Biochemistry of Pathogenic Anaerobes. VI. Proteolytic Action of Bacillus Sporogenes (Metchnikoff) and Bacillus Welchii. C. G. L. Wolf.—p. 270.
*Comparative Toxicity of Triphenylmethane and Flavine Dyes for Tissue and Bacteria. J. H. Mueller.—p. 308.
Adenoma of Bladder. W. E. de Korte.—p. 319.
*Loss of Complementing Power in Guinea-pig Serum at Various Temperatures. J. W. Bigger.—p. 323.
*Cultural Characters of Certain Anaerobic Bacteria Isolated from War Wounds. R. S. Adamson.—p. 345.

Can Lipoids Act as Antigens?—Wang's experiments showed that in the case of the dry blood an antigenic capacity is found in the extract of a lipoidal nature. This finding differs from that shown in the experiment conducted along similar lines by Ritchie and Miller. The disagreement in the results is probably due to the fact that in the procedure Wang adopted for extraction the blood was treated alternately with ether and chloroform, the extracts derived from both being put together for use. It may also be that, by saponification, the extracts were rendered more easily assimilable in the body of the animal, and, consequently, in a more favorable position to bring on a reaction. With regard to the lipoidal extracts of egg white and horse serum, experiments fail to present any evidence of an antigenic capacity.

Detection of Diphtheria Bacilli in Swabs.—In the examination of swabs for the presence of diphtheria bacilli Wang found that wet serum is a better medium for cultivation. It is, therefore, advisable that the swab instead of being smeared on solidified blood serum should be put directly it is received, into the fluid serum and incubated. While a number of organisms met with in the throat are capable of producing acid in the wet serum, this property is especially pronounced in the case of the diphtheria bacillus. This observation would warrant the assertion that, when the reaction of the culture is unchanged or remains plainly alkaline, the diphtheria bacillus may be excluded.

Experimental Scurvy in Monkeys.—Experiments made by Harden and Zilva show that by giving monkeys a good nutritious basal diet, lacking the antiscorbutic factor, scurvy can be induced in these animals. The daily amount of food consumed naturally varied, but on the average the monkey ate about 70 gm. of wheat germ, 100 gm. of boiled rice, 80 gm. of nuts, 80 gm. of bread and 150 c.c. of beer. The autoclaved rice and the wheat germ were made up in a paste with about 100 c.c. of autoclaved milk. The food consumed by the animal was of high calorific value and contained an abundant supply of protein and of the antineuritic factor.

The experiment commenced June 25. The first definite symptoms of scurvy were observed October 18. A second monkey was fed autoclaved rice and bread and milk. The main feature of this diet, in contradistinction to the one of the previous experiment, was that, besides the lack of the antiscorbutic, the antineuritic factor was almost absent. The only source for the antineuritic factor was the autoclaved milk. This animal consumed on the average 200 gm. rice and 40 gm. of bread and half a pint of milk daily. The experiment was started July 28. November 6 decided hemorrhages of the gums were first observed. A third experiment was performed to demonstrate that the scorbutic condition in the monkey induced by dietetic means can be cured by the administration of an antiscorbutic. The main ration of this animal consisted of rice and wheat germ. Bread and monkey nuts were not given to this animal. The average daily consumption was about 200 gm. of rice and 40 gm. of wheat germ. The experiment was started October 18. December 29 slight sponginess of the gums was observed. January 23 the scorbutic condition of the animal was very acute. The antiscorbutic used was lemon juice from which the free citric and other acids had been removed. January 23 the monkey received, by means of the stomach pump, 25 c.c. of the treated lemon juice, which was equivalent in antiscorbutic potency to 100 c.c. of the original juice. The next day it received another dose, equivalent to 100 c.c. of lemon juice. After twenty-four hours an improvement could already be observed. Doses of the treated lemon juice equivalent to 150 c.c., 250 c.c., 250 c.c., and 130 c.c., were administered during the following four days. January 28 the gums were almost normal and the teeth were practically firm. The monkey continued on the scorbutic diet with a daily addendum of treated lemon juice, equivalent to 10 c.c. of the original juice. March 16 it was chloroformed, and, with the exception of an old green-stick fracture of the radius of the left forearm just above the wrist, everything was found to be normal at the postmortem examination.

Sebaceous Glands in Cervix Uteri.—Nicholson believes that the sebaceous glands in the cervix of the uterus in his case were a product of the mesoblastic lining of the cervix.

Spirobacillus Zeylanicus.—Taylor isolated this organism from the stools of a case of postdysenteric colitis. The case is reported in detail.

Chemotherapy of Bacterial Infections.—Experimental proof is afforded by Browning and Gulbransen that by the use of antiseptics a highly virulent and invasive bacterial infection can be overcome while still relatively localized in the living body, although the tissues by themselves are unable to cope with it; further, the evidence indicates that this result has been attained by an actual cooperation of the chemical agent along with the natural defensive mechanisms, i. e., the organisms are not killed through the sole agency of the antiseptic. A strain of pneumococcus rendered highly virulent for mice by repeated passages was used to infect a series of animals intraperitoneally, then, after an interval, watery solution of diaminoacridine sulphate (proflavine), 1:600, in the proportion of 1 c.c. per 20 gm. mouse, was introduced into the peritoneum. That the therapeutic result depends on the combined action of the drug and the tissues on the bacteria, appears from the fact that an amount of antiseptic which too closely approaches the toxic limit may fail to produce cure, whereas smaller doses are effective. Thus, in one series, out of eight mice receiving a dose of from 1:400 to 1:500 proflavine, seven were cured, while out of four receiving a dose of 1:3,000, which is the maximum nonlethal dose, two died with pneumococcal septicemia and one died acutely with other organisms in the heart blood.

Triphenylmethane and Flavine Dyes.—Mueller found that the triphenylmethane dyes seem to show a very definite specificity, now for one and now for another type of organism. Malachite and brilliant green, closely related chemically, affect the streptococcus and the colon bacillus. The two violets, probably the same chemical in different degrees of purity, attack the colon bacillus and *B. pyocyaneus*, while ...e two blues, again closely related and quite distinct from any of the others, seem specific for gram-positive organisms. The formation of addiction products of the dye with a halide, as in methyl green and iodin green, seems to greatly reduce toxicity for all bacteria, and sulphonation apparently quite destroys it. Tissue cells are inhibited before streptococci in every case by the triphenylmethane dyes. In the case of the flavines, however, the dilution producing inhibition is the same for tissue and streptococci, although other bacteria require greater concentrations. Specific action, while less marked than in broth, runs in a general way parallel to it, while in brilliant green and night blue there is evidence of specific toxicity for tissue cells. From these data one would expect better clinical results from the use of flavine than brilliant green in wound dressings. It is also worthy of note that in every case a greater concentration of dye is necessary to inhibit bacterial growth in the presence of serum and tissue than in plain broth. In no case in this series did an antiseptic show greater toxicity for bacteria than for tissues.

Complementing Power in Guinea-Pig Serum.—The methods described by Bigger are said to afford a satisfactory means of estimating decreases in the complementary powers of serums over considerable periods of time.

Cultural Characters of Anaerobic Bacteria.—Fifteen organisms were studied by Adamson and their cultural characters are described. Thirteen are sporeproducing bacilli, one a nonsporing bacillus and one a diplococcus.

Journal of State Medicine, London

August, 1919, **27**, No. 8

After War Social Reconstruction. T. Oliver.—p. 225.
War Time Experience of Factory Medical Officers and Position of Factory Medicine Under Peace Conditions. W. J. O'Donovan.—p. 241.

Journal of Tropical Medicine and Hygiene, London

Aug. 1, 1919, **22**, No. 15

Blackwater Fever. J. P. Williams.—p. 145.
Etiology of Blackwater Fever. W. E. Masters.—p. 146.
Occurrence of Carcinoma in Liver of a Leper and of Squamous Epithelioma with Tuberculosis in a Cow. J. B. Cleland.—p. 147.

Lancet, London

Aug. 16, 1919, **2**, No. 5007

India During War. A. W. Sheen.—p. 273.
Maternal Mortality in Childbed. J. Phillips.—p. 275.
*Conduct of Labor and Puerperal Sepsis. J. H. E. Brock.—p. 277.
Kineplastic Amputations. M. F. Kelly.—p. 280.
*Lengthening of Amputation Stumps. W. E. Gallie.—p. 282.
Case of Carcinoma of Pelvic Colon Treated by Excision and Anastomosis. C. Frankau.—p. 282.
Segmental Hyperalgesia in Malaria. D. W. C. Jones.—p. 283.
Paratyphoid Infections of Pleura. J. H. Abram and E. Glynn.—p. 283.
Smallpox Notes for Practitioners. W. M. Wanklyn.—p. 284.
*Vaccination by Subcutaneous Injection. J. R. Goodal.—p. 285.

Conduct of Labor and Puerperal Sepsis.—The premise that nature sterilizes the vagina and washes out intruding organisms is defended by Brock as follows: One of the earliest changes in the uterus on conception is edema of the cervix, which steadily progresses throughout gestation. This phenomenon is not due to pressure, because it starts almost with impregnation. Whatever its cause, it subserves a purpose over and above that of increasing the dilatability of the cervix. With the progress of the presenting part, the cervix becomes gradually dilated and subjected to an increasing pressure. As a result, vessels are ruptured, and tears, small or large, occur. The torn vessels are sealed, and from them exudes a copious flow of serum mixed with extravasated blood. The purpose of this serous exudation is, doubtless, physiologic, and it is in all probability bactericidal, resembling the flow of lymph after wounds in other parts. Brock suggests that its rôle is probably partly to cleanse the vagina and partly bactericidal to retained organisms. While all this is a physiologic process and wholly beneficial to the patient, it becomes far otherwise if vaginal examinations are made the rule in labor. Instead of protection, it may be a menace to life.

Lengthening of Amputation Stumps.—A case is cited by Gallie to show that amputation stumps may be lengthened.

With an osteotome applied in the sagittal plane one half of the terminal 3½ inches of the shaft of the bone was cut free. This piece of bone was slid downward so as to lengthen the femur by 2½ inches, and was then fastened by two long screws of beef bone. The flaps were then dissected up sufficiently far to allow them to be drawn down and closed over the end of the bone. The wound healed by primary union, except for a hematoma, which opened spontaneously and disappeared without infection; otherwise recovery uneventful. Two months later the fragments were solidly united and the patient commenced active exercise of the stump to increase the density of the bone. He is now wearing the ordinary artificial limb and has a very satisfactory stump. The extensive splinting of the bone led to rather profuse hemorrhage. Gallie suggests that this could be avoided by substituting for the method described an ordinary inlay bone graft or a graft driven into the medullary cavity.

Vaccination by Subcutaneous Injection.—Goodall has vaccinated hypodermically approximately 6,000 men and quite a number of officers' children. He uses the ordinary vaccine put up in the small capillary glass tubes, injecting 1 c.c. and changing the needle after each injection. The local reaction sets in usually in from two to four days. This local reaction is much like that following antityphoid inoculation and just as variable in intensity. About 8 per cent. of vaccinations proved ineffective, showing but slight local reaction, not more than, perhaps, could have been accounted for by the iodin applied to the skin; in 70 per cent. (approximate only) there was a reaction similar to the usual reaction after antityphoid inoculation, i. e., local swelling, heat, tenderness, slight pain and redness. In a small percentage of cases the reaction was marked, causing swelling and edema of the elbow, and in a few cases edema resulted involving the whole arm and hand. In every one of the 6,000 cases vaccinated hypodermically by Goodall or under his supervision the local condition subsided without any signs other than those of excessive local reaction. After the seventh or tenth day the local swelling and induration subside, leaving a hard nodule in the subcutaneous tissues, usually ill defined at first, becoming later well circumscribed and lasting for about one month. This is quite painless after the first acute reaction. The process differs in no respect from that of an antityphoid reaction, except that the onset is slower and the reaction spreads itself over several days. The general symptoms vary in intensity and do not differ from those of ordinary vaccination. In the 6,000 cases quoted there was not one case of infection.

Medical Journal of Australia, Sydney

Aug. 2, 1919, **2**, No. 5

Risk of Malaria in Australia. R. Fowler.—p. 83.
Malaria in Macedonia. M. C. De Garis.—p. 84.
Incidence of Malaria Among Troops on a Transport to Australia from Egypt and Palestine. W. Summons.—p. 86.
Fracture of Mandible near Angle. R. V. Hennessy.—p. 88.

Practitioner, London

August, 1919, **103**, No. 2

Diet in Acute Disease. J. F. H. Broadbent.—p. 81.
Dietetics of Diabetes and Glycosuria. W. L. Brown.—p. 88.
Diet in Obesity. L. Williams.—p. 100.
Dietetics in Chronic Arthritis. F. G. Thomson.—p. 110.
Diet in Renal Circulatory Disease. P. Bergouignan.—p. 122.
Connection Between Food and Disease in Infants. E. Pritchard.—p. 131.
Diet in Tuberculosis and Pulmonary Disease. M. Paterson.—p. 143.
Dietetics in Dermatology. G. Pernet.—p. 153.

Bulletins de la Société Médicale des Hôpitaux, Paris

July 4, 1919, **43**, No. 23

*The Initial Lesion of Pulmonary Tuberculosis in Infants. R. Dumas and H. Béclère.—p. 651.
*Bronchiestasia Cured by Induced Pneumothorax. E. Rist.—p. 652.
Induced Pneumothorax in Treatment of Dilatation of the Bronchi. P. E. Weil.—p. 656.
*Lethargic Encephalitis. Papin, D. Denéchau and C. Blanc.—p. 659.
*Menorrhagia Arrested by Antithyroid Treatment. P. E. Weil.—p. 672.
Influence of Minor Professional Traumatisms on Localizations of Syphilis. G. Railliet.—p. 677.
*Necropsy Findings in Pneumonia. P. Menetrier.—p. 679.
Pneumococci Isolated in Infants' Ward. P. Nobécourt and J. Paraf.—p. 687.

Initial Lesion of Pulmonary Tuberculosis in Infants.—The breast fed infant of 13 months contracted tuberculosis from a nurse and developed *splénopneumonie bacillaire* with signs of tracheobronchial glandular involvement. The child threw it all off finally, and six years later not a trace can be found except one small shadow, evidently a calcified gland. This was probably the initial lesion, and around it was a perituberculous congestion so intense that it simulated pleurisy of the right side.

Artificial Pneumothorax in Treatment of Dilatation of the Bronchi.—Rist reports the case of a child of 5½ with a manifest focus of sclerosis in one lung, with bronchiectasia, consecutive to bronchopneumonia from whooping cough and measles two and a half years before. He induced artificial pneumothorax, and a complete cure followed which has persisted for five years to date. This measure should not be applied as the last resort, but, as in this case, before the sheets of the pleura are solidly adherent, and while there is still some sound elastic tissue in the inferior lobe. In the radioscopic surveillance of this case he noted, as with any pneumothorax of the kind, that during inspiration the mediastinum was displaced and the amplitude of the heart beat exaggerated on that side. He also noted that the stump of the left superior lobe swelled up suddenly at each ventricular systole, shrinking to its former size at each diastole. Weil reports two similar experiences, but as the interval had been eighteen years or more the pleural adhesions were too solid for the artificial pneumothorax to prove effectual. Only partial benefit was realized, and this only in one case, but even thus the results are encouraging for this new application of artificial pneumothorax in treatment of dilatation of the bronchi before irreparable lesions are installed.

Lethargic Encephalitis.—Papin and his co-workers remark that this disease seems to be spreading in France, and they report four cases in adults at Angers, with necropsy in one. They comment on the number and diversity of the symptoms. In two cases there were nocturnal attacks of precordial pain, distress, tachycardia and convulsive movements, all recurring for more than six weeks. None of the three survivors have regained their earning capacity during the four months to date. They seem to be crippled in body and one in mind besides.

Antithyroid Treatment of Menorrhagia.—In the case reported by Weil the uterine hemorrhages had kept up for twenty-five days each month for a year, and the woman of 30 had only 2,000,000 erythrocytes and 40 per cent. hemoglobin, while the blood took ten minutes for the clot to form, and coagulation of the venous blood took fifteen minutes. The gums also bled readily but there were no personal or hereditary hemorrhagic antecedents. The woman had a small goiter but no other signs of exophthalmic goiter. He gave tentative organotherapy with thyroid, suprarenal, pituitary and other organ extracts, and tried iron and arsenic—all to no avail. Then he changed to what he calls antithyroid treatment, and a complete cure soon followed. He used for this three teaspoonfuls a day of a glycerin preparation of the blood of goats thyroidectomized over a month before. The literature records the cure by this means of a persisting and recurring hemorrhagic pleurisy in a case of exophthalmic goiter, and the arrest of severe menorrhagia in one woman, a virgin. The hemorrhage-reducing power of this antithyroid treatment seems to be restricted to the genital sphere and complex endocrine disturbance. Ramond has reported a case in which thyroid treatment improved myxedema in a woman of 48, and seemed to cure completely a tendency to multiple recurring hemorrhages.

Necropsy Findings in Pneumonia.—Menetrier classifies the macroscopic findings in 400 pneumonia cadavers. He was impressed among other things by the fact that in the 181 showing tuberculous lesions, in seventy-eight they were of long standing. Fatty degeneration of the liver was almost constant, and in nearly all it seemed to be the direct work of the pneumonia toxin.

Paris Médical

Aug. 2, 1919, **9**, No. 31

Review of Renal Pathology Since 1914. R. Grégoire and P. V. Radot.—p. 77.
Urinary Surgery in 1918. F. Marsan.—p. 82.
Acute Azotemia in Mercuric Chlorid Nephritis. P. Merklen and C. Kudelski.—p. 92.
*Nontraumatic Perinephritic Hematomas. Rapin.—p. 94.
*Ileopelvic Congestion. F. Cathelin.—p. 103.

Nontraumatic Perinephritic Hematoma.—Rapin relates that the hematoma had developed in the man of 35 after scarlet fever. Except for nephritis the kidney seemed sound at the two interventions to evacuate the hematoma. The man died a year later from the progress of his untended nephritis. The diagnosis has rarely been made before the operation, the symptoms indicating merely internal hemorrhage, with sudden violent pain in the kidney region and retroperitoneal tumefaction. Ecchymosis in the lumbar and scrotum region is instructive. The pain differs a little in its site from that with acute pancreatitis, and the kidneys should be examined even when the latter is suspected. Operative treatment has given 50 per cent. recoveries, while all died of the eight under expectant treatment.

Ileopelvic Congestions.—Cathelin applies this term to the cases that used to be called *faux urinaires* or *psychopathes urinaires*, explaining the organic basis for the pelvic plexalgia, pelvic neurosis, or pelvic varicocele. The disturbances are of a functional nature resulting from the abundance of veins in the pelvis. It is an actual venous lake, the vessels and the plexuses closely interwoven. The whole region below the diaphragm is varicose, and vague, deep and radiating pains, disturbance in micturition during the day (not at night as these patients "urinate with their brain," and at night the brain rests), and a nervous or syphilitic taint are the most prominent signs and symptoms. The course and evolution are very slow, and disturbance may take the "false urinary" or the "false genital" form. The subjects may complain of the bladder, kidneys, prostate or urethra, of impotence, spermatorrhea, nocturnal pollutions, etc. There may be no history of gonorrhea or acquired syphilis. Treatment should be by hygiene, psychotherapy, possibly epidural injections, and training the urinary or genital apparatus to better habits. No intra-urethral treatment should be given, no instillation or lavage of any kind, but electrodes to the perineum and above the pubis sometimes give results. He advises as the most important measure to give a sedative at night to ensure sleep, with valerian daily and some depurative every morning, such as a tablespoonful of "horseradish syrup," and, above all, 30 drops daily of the fluid extract of hamamelis, fractioned, before each of the main meals of the day, supplemented by diuretic teas in abundance to dilute the salts and stone-forming elements in the urine. The catheter must never be used in these cases, as it not only could do no good but might transform the patients into true *urinaires* by infecting them or breeding a habit. Severing the pubic veins is a measure that he does not recommend.

Presse Médicale, Paris

July 31, 1919, **27**, No. 42

*Reconstruction of the Nose. L. Ombrédanne.—p. 413.
*Operative Treatment of Ulnar Contracture. R. Le Fort.—p. 414.
*Operative Treatment of Bânti's Disease. L. Losio.—p. 415.

Reconstruction of the Nose.—Ombrédanne asserts his conviction that if the Italian method had been followed in some recently published experiences with reconstruction of the nose, the outcome would have been still better as there would have been no need to depend on flaps from the vicinity. His success with the Italian method seems to have been remarkable, judging by the cases illustrated. He ascribes his success to certain technical points which he describes in detail, especially the importance of refraining from modeling the nose after the Italian flap from the arm has been cut off. It must be given two months to retract and heal definitely in place before the tip of the nose and the nostrils are modeled into their final shape.

Ulnar Contracture.—Le Fort's illustrations show how the contracture (if there is no bony ankylosis) can be corrected by severing the branch of the extensor tendon that is attached to the first phalanx, severing at the same time the fibers joining the tendon to the perforating fibers of the palmar aponeurosis and the interossei and the lumbricales at their junction with the extensor tendon. All these fibers are cut close to the tendon, which is thus relieved from the inward pull causing the claw hand.

Operative Treatment of Banti's Disease.—Losio recently reexamined a woman of 58 who seemed to be in perfect health although in 1916 he had operated on her for primary splenomegaly with cirrhosis of the liver at the ascites stage—a typical case of advanced Banti's disease. He combined splenectomy with omentopexy, and cites others' experiences to confirm the rational premises and successful outcome of this combined method. The spleen is the organ primarily affected, and splenectomy is indicated whenever the primary splenopathy is capable of entailing cirrhosis of the liver. He warns that every scrap of the spleen must be removed with minute care, and search must be made for possible supernumerary spleens which should also be removed.

Aug. 7, 1919, **27**, No. 43

*Disturbance in Absorption of Fat by the Intestines. A. Lemierre and others.—p. 425.
*Extraction of Projectiles under Roentgen Control. Gudin.—p. 427.
Symptoms from Wounds of Arteries. H. Mondor.—p. 429.

Disturbance in Intestinal Absorption.—Lemierre and his co-workers review the means at our disposal to detect defective absorption of fat by the bowel, especially when there is retention of bile and disease of the pancreas. They insist that bile is indispensable for absorption of fat by the bowel, while this is but little affected by lack of pancreatic juice. At least, the latter is not indispensable, like the bile. The partial or total absence of absorption of the fat ingested should be regarded as a sign of insufficiency of the biliary apparatus rather than as a sign of insufficiency of the pancreas alone. The pancreas may be decidedly pathologic without the absorption of fats being much disturbed. Previous research in this line has given conflicting findings on account of the inexact methods followed. By direct determination in the blood of the absorbed fats, the findings have always been exact and concordant, and this method they commend as dependable. Chemical tests for fat in the blood are too complicated for general use, but examination of a drop for blood-dust, hemokoniae, is simplicity itself, as all that is necessary is to examine with the ultramicroscope a drop of blood between slides. They studied in the dog the effect on absorption by the bowel of fat ingested after resection of the common bile duct, and also in clinical cases of obstruction of the biliary passages. When bile is completely shut off, no hemokoniae appear in the blood after ingestion of a test meal of fat, and chemical tests of the blood show no difference in the fat content fasting or after the test meal. This estimation of the difference between the lipemia fasting and after the test meal is a much easier method than to determine the absolute fat content. The fat in the blood reaches its height from four to six hours after the test meal, and the examination of the blood should be done during these hours.

Extraction of Projectiles Under Roentgen Control.—The special advantage of Gudin's simple and portable device is that the radioscopic localization can be done in daylight and without changing the position of the patient. In case the roentgen procedure is not available, the device can be used as a simple compass. Seven illustrations of it are given.

Progrès Médical, Paris

July 19, 1919, **34**, No. 29

Symptoms with Injury of Nerves in Submaxillary Space. A. Barbé.—p. 281.
Spa Treatment of Neuralgia. L. Bertier.—p. 282.
Radium Emanations in Therapeutics. Baud and Mallet.—p. 284. Cont'n.
Some Indispensable Formulas in Dermatology. L. Bory.—p. 287.
*Lactic Acid-Albumin in Treatment of Intestinal Infections. B. Gheza.—p. 288.

Acid Treatment of Intestinal Infections.—Gheza bases this treatment on Giani's success with a fermented lactic acid-peptone serum in treatment of bowel infections. Moruzzi confirmed Giani's success, but he ascribed it exclusively to the acid. Gheza uses an acid drink for the purpose, made of 14 parts lactic acid with 250 parts sugar in 500 parts beef serum. In twenty cases of dysenteric enterocolitis with over twenty bowel movements a day, the patients improved remarkably under this treatment, as also in five cases of typhoid and one of paratyphoid. In one of the dysentery cases the number of passages dropped from twenty to one by the fourth day. In a typhoid case, this treatment begun the eighth day was followed by defervescence in three days after this "lemonade treatment" was begun. No details are given as to doses, etc.

July 26, 1919, **34**, No. 30

*Tuberculous Process in Lower Jaw. A. Aimes and Aubanel.—p. 291.
Radium Emanations in Therapeutics. Baud and L. Mallet.—p. 293. Conc'n.
*Spa Treatment of Liver Diseases. Willemin.—p. 296.

Tuberculosis of the Jaw.—Aimes and Aubanel report the case of a boy of 8 who developed a tuberculous process in one ankle, a year later one in the forearm, and later one in the tibia. Five years after the first symptoms, an abscess appeared in the left lower jaw and pus kept reforming after repeated punctures. The entire left jaw shows notable thickening on radioscopy, with a zone of less opaque bone in the horizontal ramus. The prognosis of such lesions is grave. In Perrot's compilation of twenty-four cases, only ten of the patients recovered, and this recovery is precarious. In two cases the patients succumbed to tuberculous meningitis. The outlook in the present case seems absolutely bad.

Spa Treatment of Liver Disease.—Willemin explains the factors in the benefit in disease of the liver from a course of mineral waters at Vichy. It seems to stimulate the antitoxic action of the liver and restores the physiologic balance as the poisonous wastes with which the cells were gorged are washed out as by a freshet. Under the influence of the course the leukocytes show important modifications and phagocytosis is whipped up. Analysis of the urine, stools and blood shows the benefit from the waters, in particular on the three great functions of the liver. The power to reduce sugar is regained to large extent, so that diabetics with from 40 to 80 gm. sugar witness its disappearance, and larger sugar contents drop to a third. The waters do not seem to benefit materially dyspepsia of nervous origin or with dilatation of the stomach, but when liver disease is a factor, marked improvement is realized. Symptoms of liver involvement should be sought in all cases of dyspepsia. If the liver is too profoundly diseased for recuperation, the Vichy waters may exaggerate the morbid condition, as in conditions generally in which the reaction to the effect of the waters may be more than the extremely debilitated patients can stand.

Revue de Chirurgie, Paris

January-February, 1919, **38**, No. 1-2

*Melanic Cancer of Male Breast. E. Forgue and E. Chauvin.—p. 1.
*Wounds of the Liver. Soubeyran.—p. 21.
*Traumatic Hematomas Back of the Omenta. G. Miginiac.—p. 81.
Physiologic Torsion of the Femur. P. le Damany.—p. 135.
*Treatment of Cavities in Bones from Traumatic Osteomyelitis. H. Lefèvre.—p. 140.

Melanic Cancer of Male Breast.—Forgue and Chuvin report a case of melanic cancer of the male breast and summarize 18 others they have found on record. The ages ranged from 10 to 69, with 40 as the average. The influence of traumatism seems evident in 4 cases, but heredity as a factor did not appear except in one case. The list includes 5 Frenchmen, 6 Anglo-Americans, 6 Germans and one Italian. The tumor had been noted before the medical examination from one to five years, an average of nearly two and a half years. Long survival is recorded in some cases with early operation before the glands had become involved. In 2 cases two operations were required, and the patients survived three and fourteen years.

Wounds of the Liver.—Soubeyran analyzes 323 cases of war wounds of the liver, and compares them with the stab wounds of the liver in peace, discussing the treatment and the outcome.

Retro-Omental Hematoma.—Miginiac remarks that the only treatment for traumatic hematoma back of the omenta is by a laparotomy. In forty-five cases he has compiled, the mortality in all the untreated cases was 100 per cent., and only two recovered in the six cases treated by puncture alone.

Treat of Cavities in the Bones.—Lefèvre noted that cavities after traumatic osteomyelitis, when located in the femur, seemed to be the hardest to cure. He reviews the indications for treatment, and summarizes fifty-six cases from his own service.

Revue Neurologique, Paris

February, 1919, **26**, No. 2

*Experimental Study of Lesions from Explosions without Direct Contact. A. Mairet and G. Durante.—p. 97.
Hyperostoses in Case of Lateral Amyotrophic Sclerosis. A. Barbé.—p. 111.
*Conceptions of Space, Time and Number. W. van Woerkom.—p. 113.

Experimental Research on Aerial Shock.—Mairet and Durante give photomicrographs of the findings in rabbit brains after exposure to explosions without direct contact. Their extensive research confirms that it is necessary to distinguish between a contusion, a commotion or concussion, and an emotional shock. The effects of contusion from a solid or gaseous agent are focal lesions with attrition. The effects of a commotion are a vibratory shaking up, and this causes diffuse lesions in the elements most readily shaken up, but there is no attrition. The emotional shock is the result of exhaustion and overwork or excesses of various kinds, and its effect is purely functional. The *commotioné*, they reiterate, is a *blessé interne* with lesions which differ from those we had been accustomed to observe before the war. The diffuse lesions are extremely minute but extremely numerous, and the resulting symptomatology is often abortive but is always complex—an entirely new field for exploration which may lead indirectly to the solution of many hitherto obscure problems. It may reveal the organic basis for many conditions hitherto deemed pure neuroses. The data presented, they add, renders darker the outlook for the *commotionés*, even the simplest forms, as they show that these immediate war vascular and other lesions may lead to grave and irreparable secondary lesions. Not only will many of them be unable to recuperate, but they seem destined to entail sequelae calling for disability pensions. (Although "concussion" is a good French word, it is never used in this connection, as it has a special meaning of illegal graft in French. "Commotion" is the term preferred in France, and it is being generally accepted elsewhere now.)

The Geometric Sense, Sense of Time and of Numbers.—Van Woerkom describes a case of retrogressing aphasia of the Broca type which emphasizes anew the essential difference between the psychic act of recognition—passive memory—and the psychic act of evocation—active memory.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 24, 1919, **49**, No. 30

The Functions of the Cerebellum and Adjacent Organs. E. Rothlin.—p. 1113.
Errors in Interpretation of Wassermann Reaction. G. Cornaz.—p. 1124.

Chirurgia degli Organi di Movimento, Bologna

July, 1919, **3**, No. 2-3

*Projectile Fracture of the Femur. A. Contini.—p. 133.
*Surgery of Amputation Stumps. D. Montemagno.—p. 201.
*Projectile Wounds of Spinal Cord and Meninges. G. Pieri.—pp. 257.
*Reconstruction of the Thumb. G. Pieri.—p. 325.
*Topography of Fibers of External Popliteal Nerve. G. Perrone and G. Tanfani.—p. 332; Id. of Ulnar Nerve. G. A. Pietri and G. C. Riquier.—p. 336.

War Wounds of the Femur.—This is a summary of the experiences and outcome with fracture of the shaft, or both shaft and epiphysis, in sixty cases.

Surgery of Amputation Stumps.—Montemagno discusses the various indications which confront the orthopedic surgeon, and gives an illustrated description of the technic advisable under the different conditions. The work is based

on 384 cases of reamputation at the Rizzoli Orthopedic Institute. In fifty-four cases the reamputation had to be bilateral. A number of points are emphasized to guide surgeons at the primary amputation.

War Wounds of the Spinal Cord and Meninges.—Pieri analyzes 119 clinical cases of this kind, observed mostly at an advanced surgical station.

Reconstruction of the Thumb.—Pieri slits the soft parts down to the base of the basal phalanx of the thumb, and prepares this phalanx to serve as the thumb. In the two cases illustrated, the men were able in a few weeks to grasp firmly articles that were not very small with the reconstructed thumb.

Topography of the Fibers of the Popliteal and Ulnar Nerves.—In these two communications a number of cases are described in which peculiar conditions after war wounds remarkably facilitated investigation of the course of the fibers in these nerves, and of the domain innervated by the different fibers.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 6, 1919, **40**, No. 54

*Electric Treatment of Causalgia. G. Boschi and G. Tanfani.—p. 540.

Electric Treatment of Causalgia.—Boschi and Tanfani report most gratifying results from the high frequency current in treatment of causalgia, describing a number of typical cases after war wounds. Transient relief followed each application, and the pain grew more attenuated and disappeared completely in from two weeks to two months in about half the cases. This simple treatment should be given a trial if nothing can be found that suggests pressure on the nerve. They apply the current merely in the form of the effluvium.

July 10, 1919, **40**, No. 55

*Induced Pneumothorax In Treatment of Tuberculous Pleurisy. P. Binda.—p. 554.

Tuberculous Pleurisy.—Binda points out that in treating tuberculous pleurisy we must not overlook the practically invariably accompanying tuberculous process in the lung. For this, we are reduced to general measures and local compression of the lung by induced pneumothorax. This can be applied after evacuation of the effusion and in appropriate cases seems the most rational and effectual method at our disposal. It obviates any disturbance resulting from evacuation of the fluid, and prevents formation of adhesions. Air alone in the pleura is not always capable of preventing the total or partial collapse of the sheets of the pleura. The pneumothorax should be kept up until a connective tissue barrier has been thrown up around the pulmonary focus.

Riforma Medica, Naples

July 19, 1919, **35**, No. 29

*Pluriglandular Dystrophy. E. Mariotti.—p. 590.
*Physical Agents as Affecting Phagocytosis of Bacteria. P. Ciancio.—p. 596.
Treatment of Scabies. G. Riva.—p. 599.
*Adaptation of Bacteria. P. Rondoni.—p. 599.
*Bone Complications of Typhoid. E. Aievoli.—p. 601.
The Scientific Sources of Modern Stomatology. B. de Vecchis.—p. 606.

Glandular Dystrophy.—Mariotti gives an illustrated description of a case of general pluriglandular dystrophy, predominantly thyroid and genital, in a tall young man with persisting juvenile characteristics. Implantation in the thigh of a testicle just removed from another patient was followed by some improvement, but it proved only brief and transient as the implanted tissue was resorbed.

Influence of Physical Measures on Phagocytosis.—Ciancio reports experiments with human leukocytes in suspension in their own serum, defibrinated, seeking to determine the effect of heat, sunlight and ultraviolet rays on the phagocytosis of bacteria. The germs studied were the staphylococcus, colon bacillus and *Faecalis alcaligenes*. The staphylococcus after heating was more easily incorporated by the leukocytes, and phagocytosis was still more intense after the germs had been exposed to the ultraviolet rays, and most intense of all after exposure to sunlight. The ultraviolet rays seemed to damage the other germs to such an extent that they were destroyed by the serum before phagocytosis was possible.

Adaptation of Micro-Organisms to the Organism.—Rondoni cites some facts which seem to suggest that pathogenic microorganisms may have their protoplasm altered in time so that they then become susceptible to the action of antibodies which before they resisted, or vice versa. This calls for caution in the estimation of certain biologic reactions, while at the same time it opens new routes for progress, and explains certain still obscure points in infectious diseases. For instance, the self-limiting course in relapsing fever which stops after two or three relapses, while syphilis keeps on indefinitely.

Bone Complications with Typhoid.—Aievoli discusses the bone and joint complications with typhoid and paratyphoid and the importance of bacilli carriers. He insists on the necessity for watching over convalescents and not ascribing to "neuralgia" or "hysteria" any pain in bones or joints. The danger from an overlooked spondylitis is particularly grave on account of the deformity liable to follow if immobilization is neglected. It may not be necessary to apply a stiff corset, but at least the patient should be immobilized in a good position.

Rivista di Clinica Pediatrica, Florence

June, 1919, **17**, No. 6

Bacteriology of Influenza in 1918. G. Fiore.—p. 281.
*Chronic Hemorrhagic Purpura and Tuberculosis. G. Genoese.—p. 304.

Chronic Purpura and Tuberculosis.—Genoese analyzes the scanty literature on chronic purpura, and reports two cases in which chronic hemorrhagic purpura developed in children of 6 and 2, and was soon followed by symptoms of pulmonary tuberculosis. He thinks this is more than a coincidence, and argues that the purpura was the first manifestation of the tuberculosis; in these cases it was the first and continued the most predominant. In Bensaude's complication of 36 cases of chronic purpura, tuberculosis was manifest in 7 and probable in 5 more; in Monnot's 48 cases, tuberculosis was certain in 16. In some of these cases the tuberculosis affected the peritoneum, meninges, kidneys, glands or suprarenals instead of the lungs. In conclusion he calls attention to the appearance of giant ecchymoses under the influence of tuberculin treatment.

Rivista Critica di Clinica Medica, Florence

May 24, 1919, **20**, No. 21

*Pleurisy with Induced Pneumothorax. A. Varisco.—p. 241.

Early Sign of Pleurisy with Induced Pneumothorax.—Varisca has noted that when inflammation develops, the injected gas becomes rapidly absorbed. This is the first objective warning that pleurisy is installed.

Anales de la Facultad de Medicina, Lima

March-April, 1919, **2**, No. 8

Mental Disease in Early History of Peru. (Locos de la Colonia.) H. Valdizan.—p. 71. Cont'n.
*Yellow Fever in Peru. J. Arce.—p. 93. Cont'n.
*Trypanosome Found in Blood of Bats at Lima. M. Noriega del Aguila.—p. 134.

Yellow Fever in Peru.—Arce is professor of tropical medicine, and he discusses here the alleged endemic occurrence of yellow fever in the coast towns of Peru, giving a historical sketch of the endemic foci in Guayaquil and Panama and its eradication in Panama. The epidemics of supposed yellow fever in Peru in previous centuries are also described in this instalment of his work. He mentions parenthetically Manson's blunder in stating that yellow fever has been encountered at Cuzco, Peru, at an altitude of 9,000-10,000 feet. Manson was misled by Archibald Smith's report of cases of yellow fever in the coast towns, which he personally inspected, while he accepted as the same disease cases of typhus reported by others from the mountain regions. Smith stated that the points in which the disease on the coast differed from that in the mountains were evidently merely the modifications induced by the altitude and the climate. Smith's statements have never been officially contradicted, although the physi-

cians of Peru never agreed with him, and Arce says it is high time to correct Manson's mistake.

Trypanosome in Blood of Bats.—Noriega reports the finding of *Trypanosoma vespertilionis* in the blood of 7 per cent. of forty bats of the molossus species at Lima. He says that this is the third trypanosome identified in Peru, the others being the lewisi and the duttoni, found in 1904 and 1917, respectively.

Archivos Españoles de Enf. del Ap. Digestivo, Madrid

June, 1919, **2**, No. 6

*Acute Primary Spasm of the Esophagus. S. Martínez Gómez.—p. 321.
*Chronic Constipation and Vagotony. C. B. Udaondo.—p. 326.
Intestinal Tuberculosis. F. Gallart Monés.—p. 335.

Acute Primary Spasm of the Esophagus.—In the first case here described by Martínez the robust woman of 30 found that she was unable to swallow after a fall which did not cause any appreciable lesions. Fluids swallowed were expelled when they reached a certain point in the esophagus. He was able to pass a semiflexible tube down into the stomach but found it difficult to withdraw as the spasm of the esophagus gripped it tight. A faradic current was then applied to the neck and chest, and in five minutes the spasm subsided and there has been no further trouble since. She had had a similar attack of primary spasm of the esophagus seven years before on the occasion of a sudden death in the family, and it had yielded likewise to the faradic current. Its effect could have been only by suggestion, he remarks, as otherwise the galvanic current would have been indicated.

Chronic Constipation and Vagotony.—Udaondo regards spastic constipation as merely one manifestation of general overexcitability of the autonomic nervous system. This hypervagotony manifests itself in various ways, with intermittent involvement of different organs, and prominent in this is atonic or spastic constipation, isolated or combined or consecutive. Treatment of this form of constipation should be addressed to the nervous system, and he has been most successful with atropin.

Brazil-Medico, Rio de Janeiro

June 14, 1919, **33**, No. 24

Care after Pleurotomy. J. de Mendonça.—p. 189.

June 21, 1919, **33**, No. 25

Gregarina Hydrophili n. sp. G. Hasselmann.—p. 193.
Statistics of Influenza Epidemic. Bulhoes Carvalho.—p. 194.

Crónica Médica, Lima

June, 1919, **36**, No. 672

*Tuberculous Rheumatism. E. Odriozola.—p. 195.
*Urine Diagnosis of Renal Tuberculosis. C. A. Zevallos.—p. 198.
*Trichomonas Hepatitis. E. Escomel.—p. 208.
*Vincent's Angina. J. C. Dianderas.—p. 211.

Tuberculous Rheumatism.—Odriozola reports a case of subacute articular rheumatism that began to develop two days after wading a stream when much fatigued. The features of the case suggest Poncet's tuberculous articular rheumatism, and tuberculin treatment offers the best prospects, beginning with minute doses and repeating the injections weekly, gradually increasing them.

Urine Diagnosis of Renal Tuberculosis.—Zevallos applied the Debré and Paraf technic for the fixation reaction in 19 persons with kidney symptoms suggesting a tuberculous lesion, and in 12 the outcome was positive, confirmed by the course of the case in all. In a compilation of 81 certain cases, the findings were positive in 79, while inoculation tests were positive only in 60 and direct examination showed a tuberculous focus only in 22. Zeballos used serum from tuberculous patients for the antituberculosis serum, not having prepared horse serum available.

Trichomonosis of the Liver.—Escomel has encountered two recent cases and describes the total of five in which *Trichomonas intestinalis* was obtained from the abscess in the liver. Three of his five patients died, but the two latest treated by his improved method, with turpentine and iodin alternately, recovered completely after a two months' course, and have had no recurrence during the three years since. (His method was described in The Journal, May 17, 1919, p. 1501.)

Vincent's Angina.—Dianderas describes a case in his own person in which *Capsicum annuum* seemed to act like a specific. He touched the lesions with the triturated seeds in a semifluid paste, repeating the applications every fifteen minutes at first. Within thirty-six hours only slight traces were left of the gangrenous patches, and healing proceeded rapidly, although deep recesses had been left by the burrowing processes before they had been arrested by this topical medication. The burning from the first applications caused intense salivation and rhinorrhea but in three hours the fever had dropped and the relief was so intense that he slept tranquilly all night. The capsicum is a household remedy in his country, and it seemed to prove its efficacy in his case after failure of all the usual measures.

Crónica Médico-Quirúrgica, Havana

June, 1919, **45**, No. 6

*Future Orientations of the Medical Press. J. Santos Fernández.—p. 179.
*The New Orientations of the Cuban Medical Press. J. E. López-Silvero.—p. 185.

The New Orientations of the Medical Press in Cuba.—Both Santos Fernández and López-Silvero expatiate on the need for closer relations between the scientists of South, Central and North America, and mention appreciatively the Spanish Edition of The Journal as an exponent of the importance and the intensity of this movement for *aproximación de la cultura médica continental*, meaning the western continent.

Gaceta de los Hospitales, Mexico, D. F.

July 13, 1919, **2**, No. 2

Abnormal Children. A. Lozano Garza.—p. 17. To be continued.
*By-Effects with Spinal Anesthesia and Means to Combat Them. E. García.—p. 19. Concluded in No. 3.—p. 28.
Case of True Hermaphroditism. A. Jimenez O'Farril.—p. 22.

By-Effects of Spinal Anesthesia.—García examined the spinal fluid obtained by lumbar puncture drawn as soon as the patient exhibited symptoms of distress after injection of cocain into the subarachnoid space. It showed reactions indicating the presence of cocain, and the symptoms subsided at once after 40 c.c. of fluid had been withdrawn. In others of the twelve cases described the spinal fluid was withdrawn without waiting for symptoms to develop, and none of these patients developed headache or any other symptoms thereafter. His experiences show that cocain persists in the cerebrospinal fluid up to five hours after even a small amount has been injected. The advisability of withdrawing the toxic fluid at the slightest symptom of intolerance is obvious. The fluid can be withdrawn immediately the analgesia is complete. It is not even necessary to wait for the conclusion of the operation, as the analgesia once installed does not seem to lose in quality when this is done. If simple withdrawal of spinal fluid does not arrest all disturbances, he adds that the spinal canal might be rinsed out.

July 20, 1919, **2**, No. 3

*Sodium Cacodylate in Large Doses. E. Moreno.—p. 31.

Sodium Cacodylate in Large Doses.—Moreno reports three cases of rheumatism in a syphilitic, or anemia consecutive to malaria, or suspicion of pulmonary tuberculosis, all in adults, and all given a course of sodium cacodylate in doses up to 0.5, 0.6 and even 1 gm. Marked improvement was evident in all.

Gaceta Médica de México, Mexico

July, 1919, **54**, No. 1

*The Hematology of Altitudes. D. Vergara Lope.—p. 3.
Serodiagnosis of Syphilis. E. de Raso.—p. 17.
*Pulque Yeast. M. Cordero.—p. 24.
Lymphocytosis in Syphilitic Blood. T. G. Perrin.—p. 29.

The Gaceta.—This journal is the official organ of the Academia Nacional de Medicina, Mexico, and herewith it enters on the first volume of its fourth series, in its fifty-fourth year. Dr. E. Landa is the editor, and it is to be published monthly.

Hematology of Altitude.—Vergara here presents evidence to prove that the polycythemia of high altitudes is the result merely of the concentration of the blood from losses of water, owing to the dryness and rarefaction of the air. This concentration of the blood has a useful purpose in conserving the activity of the gas interchanges, and in promoting the circulation in the rarefied air. His research was done mostly on the residents of the high tableland of central Mexico, and he cites a number of similar findings by others. The average number of erythrocytes in 225 observations was, 6,480,000; Landa found in children 6,185,000, and Vergara in thirty-eight observations in adults found 6,762,236. His large work on life on high tablelands, written in collaboration with Herrera, obtained the Hodkins international medal of the Smithsonian Institute.

Pulque Yeast.—Cordero suggests that the yeast from pulque be utilized like brewers' yeast.

Plus-Ultra, Madrid

April, 1919, **2**, No. 10

Medical Inspection of Schools at Madrid. S. de los Terreros, A. Muñoyerro and M. Cirajas.—p. 175.
*Study of the Dynamics of the Heart. M. Bañuelos.—p. 182.
*Chronic Colon Bacillus Infection of the Urinary Apparatus. R. Mollá. Pascual and Picatoste.—p. 188.
*Conjunctival Tuberculosis. J. Basterra Santa Cruz.—p. 193.
Examination of Tuberculosis Suspects. Hyvert.—p. 204.
Suppurating Polycystic Kidney. M. Serés.—p. 208.
Gonococcus Pyelonephritis. Id.—p. 209.
Aviators' Neurosis. C. Juarros and A. Pérez Núñez.—p. 211.
Influence of Aviation on the Sensibility, Tendon Reflexes and Muscle Force. C. Juarros.—p. 212.
Case of Progressive Spinal Muscular Atrophy. Wenceslao López-Albo.—p. 212.
Complications of Influenza: Lethargic Encephalitis? F. Garcia.—p. 219.
Dangers in Modern Roentgenotherapy apart from the Radiations. F. Reber.—p. 224.
Case of Dercum's Disease. C. Jiménez.—p. 227.
Case of Addison's Disease. Id.—p. 228.

The Dynamics of the Heart.—Bañuelos tabulates the findings and gives tracings showing the influence of epinephrin, ether, atropin and muscarin on the blood pressure, as compared with the heart beat.

Chronic Colon Bacillus Infection of the Urinary Apparatus.—Mollá relates the details of five cases of chronic colon bacillus infection of the bladder, and emphasizes its resistance to the ordinary measures in vogue for treatment of cystitis. It seems to be aggravated by silver salts. The bladder responds with pain to pressure on the hypogastrium and through the vagina and rectum. The pain may be mild or absent when the bladder is gently compressed through the hypogastrium, but if the hand suddenly releases the bladder, as the latter stretches there is acute pain. The cystitis with this infection is often of the dolorosa type, and there is generally slight terminal hematuria, and exploration with instruments is exceptionally painful, while the capacity and tolerance of the bladder are slight or null, and incontinence is frequent. No other form of cystitis is so liable to concretions and incrustations. Two of the five cases described were in boys of about 11. Recovery has not been complete to date in any of them, but his three patients with colon bacillus pyelonephritis recovered completely after nephrectomy. In this latter affection only one kidney is involved, as a rule, and the general health does not suffer so much as with other infectious germs. The accompanying cystitis is generally mild and permits exploration of the ureters. There is seldom a history of hematuria, and tubercle bacilli are never associated with the colon bacilli. The kidney is usually displaced in these cases, and adherent, as these suppurative processes usually develop only in the displaced and adherent kidney. Concretions and incrustations do not develop with colon bacillus pyelonephritis, and the large size of the kidney is explained by the almost invariable preceding uronephrosis. The large size and the peculiar predisposition to adhesions render nephrectomy more difficult than is the rule with tuberculous kidneys.

Tuberculosis of the Conjunctiva.—Basterra says that he has encountered both primary and secondary tuberculous lesions in the conjunctiva, as he describes with numerous microphotographs. He found it more frequent in girls and women than in men; the majority of the patients were between 10 and 30 years old. The conjunctiva of the lids and tarsus is the usual site, but the clinical differential diagnosis is not enough. If the lesion is not very extensive, it yields readily to touching with 50 per cent. lactic acid.

Progresos de la Clínica, Madrid

May, 1919, **7**, No. 77

*Industrial Accidents Injuring the Urinary Apparatus. V. Juaristi.—p. 198.
Radiologic Diagnosis of Appendicitis. J. González Campo and J. González-Campo de Cos.—p. 209.
Dieting for Recalcification. S. Carro.—p. 223.

Industrial Accidents Involving Urinary Apparatus.—Thirteen illustrations accompany Juaristi's account of his experience with grave industrial accidents causing rupture of the kidney, fracture of the pelvis, etc., and the measures applied to correct conditions. Industrial accidents involving the urinary apparatus frequently entail serious inconvenience from fistulas, etc., loss of procreating power, and there is always danger of secondary stenosis. All this should be borne in mind in estimating the workman's compensation. Serious indirect injuries of the urinary apparatus from fracture of the spine generally soon terminated fatally in his experience. In other indirect cases there was merely transient paresis of the bladder.

Revista Española de Obstet. y Ginecología, Madrid

May, 1919, **4**, No. 41

*The Radiations of Radio-Elements and the Technic for Their Use. Mme. Curie.—p. 193.
Double Uterus. Cospedal.—p. 201.
*Hernia of Pregnant Uterus. J. Ledesma.—p. 205.

Radioactivity.—Mme. Curie's address was briefly summarized, Aug. 9, 1919, p. 459.

Hernia of Pregnant Uterus.—Ledesma gives drawings of a pregnant woman of 42 with a huge hernia which did not interfere with bowel movements. She had long been subject to reducible inguinal hernia, but at about the middle of this seventh pregnancy the hernia became suddenly immensely larger and could not be reduced. Soon she felt fetal movements in it, and a committee from the Academia Médico-quirúrgica was appointed to study the case and do cesarean section at the proper time. A viable child was thus delivered from the hernia, and interesting data recorded from auscultation of the uterus thus exposed for research. The uterus was reduced afterward and menstruation has been regular since.

Revista Médica, Puebla, Mexico

June 15, 1919, **1**, No. 11

*Malaria in Mexico. E. Torres.—p. 241. Conc'n.
*Localization of Pneumococcus in the Genitals. M. A. Torroella.—p. 245.
Action of Cyanid of Mercury in a Case of Chronic Malaria. E. Olivares.—p. 247.
*Septic Infection in the Newly Born. S. Ramirez.—p. 249.
Hypochlorite Treatment of Puerperal Infections. U. Valdés.—p. 250.
*Importance of Analysis of the Sputum. M. Ibañez.—p. 252.

Malaria in Mexico.—Torres here concludes his long article on this subject, discussing the mosquitoes found in Mexico, the ravages caused by the disease in that country and the means best adapted to eradicate it. He estimates at 100,000,000 pesos the annual losses from malaria, as the very lowest possible figure.

Pneumococcus Infection of the Genitals.—Torroella reports the case of a woman, a virgin, who for twenty years had had a purulent discharge from the vagina. He found that the uterine cervix was of a wine color, and the walls of the vagina congested. The pneumococcus was found in pure cultures, and recovery soon followed injections of an autovaccine by Wright's method. Similar success was realized in a second case, the patient a young man who had had an abscess in the perineum after an attack of supposed gonorrhea. A mucopurulent discharge from the meatus revealed

the pneumococcus in pure cultures, and under an autovaccine the cure was soon complete. Torroella suggests that these pneumococcus infections may be sometimes mistaken for gonorrhea, and this may explain the failure of treatment of gonorrhea in some cases. He remarks in conclusion that the clinic does not present now any fundamentally new phenomena which were not already present in the clinical pictures of a century or two ago, but they were overlooked then. If we overlook some of them now we show culpable neglect of the diagnostic means at our disposal.

Septic Infection in the Newly Born.—Ramirez says that both of the two infants died. There was a case of scarlet fever in one of the families at the time.

Revista de Medicina y Cirugía Prácticas, Madrid

July, 1919, **124**, Nos. 1562-1564

*Laryngectomy. R. Botey.—p. 41.
*Treatment of Rebellious Hiccup. D. F. Venegas.—p. 121.
Hemorrhagic Purpura. E. Giménez de Azcarate.—p. 124.

Laryngectomy.—Botey calls attention to a special drawback of the Glück technic for laryngectomy and describes how to avoid it.

Rebellious Hiccup.—Venegas has promptly relieved the patient in some cases by compression of the diaphragm. This can be accomplished by distending the stomach with gas, having the patient swallow a mixture of 5 gm. each of citric acid and sodium bicarbonate. The gas generated by this pushes up the diaphragm and this may arrest tenacious hiccup. Another means of compressing the diaphragm is by having the patient lie supine, and flexing the legs and then flexing the thighs to the extreme on the abdomen. This pushes up the contents of the abdomen, and the position should be maintained for ten minutes at least, or until the spasm of the diaphragm has relaxed. The same measure can be applied anew if the hiccup returns. He has never tried the gas distention of the stomach as the mechanical flexing of the thighs on the abdomen always answered the purpose in time.

Rev. Sud-Amer. de Endocrinología, etc., Buenos Aires

June 15, 1919, **2**, No. 6

Syphilitic Meningitis. F. Abelardi.—p. 185.
Anti-Anthrax Serum. Varsi.—p. 189.

Revista de la Universidad de Buenos Aires

May-June, 1919, **41**, No 141. (Only medical articles listed.)

Clinical and Surgical Comparative Study of Pubiotomy and Symphysiotomy. D. Iraeta.—p. 257. Cont'n.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 7, 1919, **1**, No. 23

*Pernicious Anemia as an Independent Disease. G. J. van Thienen.—p. 2006.
*Space in Imaginary Conceptions. A. Grünbaum.—p. 2014.
Influenza at Amsterdam. J. ten Brink and C. Hoek.—p. 2020.
*The Thread Test for Gastric Ulcer. A. J. A. Koelensmid.—p. 2027.
*Psychoses from Influenza. H. J. M. Schade.—p. 2029.

Pernicious Anemia as an Independent Disease.—Van Thienen examined the blood of 100 healthy persons to ascertain if there was any connection between the number of red corpuscles and the catalase content of the blood. His findings suggested the advantage of a catalase index, the quotient obtained by dividing the catalase content figure by the number of millions of red corpuscles. This represents the milligrams of H_2O_2 generated per million corpuscles. This index in health, with the normal average of 27.54 for the catalase figure, averages 6.14. This catalase index is thus an important aid in investigating pathologic blood. It is much more enlightening than the catalase figure alone. He tabulates this index from 10 cases of cancer, ranging from 5.0 to 6.5; in 10 cases of tuberculosis, range 5.6 to 6.5; 10 of acute hemorrhage, range from 5.4 to 6.6; 7 of severe anemia, range 5.0 to 6.5; 7 of leukemia, range 4.6 to 7.6, and 17 cases of pernicious anemia. In the latter group the range was from 10 to 17.6 with one exception in which it was 9.2. In 24 persons with pernicious anemia, over 60 tests all confirmed this extraordinarily high catalase index in this disease, and in this disease alone. This seems to justify its acceptance as a separate disease.

Ideas of Space in Imaginary Conceptions.—Grünbaum asked persons to close their eyes and then summon before their "mind's eye" the conception of a red ball. Then to the question where they saw the ball, some said "A few steps in front"; others "To the left" or "right." This sense of direction in imaginary conceptions was tested from various points of view as he describes.

The Thread Test of Gastric Ulcer.—Koelensmid remarks that Einhorn's thread is a very sensitive test for occult blood in the stomach. But a positive reaction does not necessarily indicate an ulcer. In 160 applications of the test the findings very rarely conflicted with what was known of the stomach conditions otherwise. In 3 cases of cancer there was no reaction; in 61 cases of certain ulcer in stomach or duodenum the reaction was positive in 44; negative in 2, and dubious in 15. In 43 cases of neurosis, atony or other nonulcer cases, the reaction was negative in 31, dubious in 10, and positive in 2. The test thus has strong corroborative value, and repeated negative reactions render the diagnosis of ulcer in stomach or abdomen highly improbable.

Psychoses After Influenza.—In each of the six cases described recovery was prompt. Schade treated them on the basis of a psychosis from toxic action, with purging, restriction to milk, no sedative drugs. The continuous bath proved very useful in two of the cases.

Nordiskt Medicinskt Arkiv, Stockholm

Nov. 30, 1918, **51**, Internal Medical Section, No. 2

*Research on Diabetes. K. Petrén.—p. 107.
*Diagnosis of Subphrenic Abscess. H. C. Jacobæus.—p. 175.
*Acidosis in Diabetes. E. B. Salén.—p. 186.
Clinical Significance of Tube Casts. U. Quensel.—p. 211.

Research on Diabetes.—Petrén records the details of twenty cases of diabetes in which he experimented to determine the conditions under which and the degree to which the tolerance for carbohydrates could be increased by an appropriate diet. The tabulated data confirm that the shorter the duration of the diabetes the better the outlook, as also with a tolerance of 40 gm. and over at the beginning of treatment. This harmonizes with Naunyn's dictum that a case of diabetes can be classed as mild only when the sugar can be banished from the urine with reduction to 60 gm. of bread. By reducing the carbohydrates in the food we not only induce symptomatic improvement, but as the tolerance for carbohydrates increases under this, we can assume that it is an actual rational treatment of the the disease, modifying perhaps certain functional factors at least. By systematic and persevering treatment for one, two or three months he increased the tolerance in many of his cases by 33, 50 or 91 to 118, and even to 128 with longer treatment.

Subphrenic Abscess.—Jacobæus found on thorascopy after exploratory puncture that the lung and pleura were hyperemic but that the diaphragm bulged upward on that side, and its surface showed signs of inflammation and fibrin deposits. The suspicion of an abscess just below was confirmed by the operation done at once. In a second case the diagnosis wavered between empyema and subphrenic abscess until air was injected after fluid had been aspirated by puncture. Roentgen examination then showed the diaphragm pushed up by the air bubble, corroborating the assumption of subphrenic abscess. As the pus soon grew sterile no operation was attempted.

Diabetic Acidosis.—Salén presents evidence to the effect that there is no regularity in the proportional urine content of the acetone bodies, and that beta-oxybutyric acid may occur in large amounts even when the total acetone content may be too small to elicit differential reactions. The beta-oxbutyric content can be estimated separately by oxidation to obtain the titrable acetone. For this he found Engfeldt's method II simple, reliable and convenient, and has still further simplified it, as he describes.